Australia's Ever-changing Forests V

Proceedings of the Fifth National Conference on Australian Forest History

Edited by John Dargavel, Denise Gaughwin and Brenda Libbis

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Authors

J.C.G. Banks	School of Resources, Environment and Society, Australian National University
Judith A. Bennett	Department of History, University of Otago, New Zealand
Robert W. Boden	Heritage Consultant, Swinger Hill, ACT
John Dargavel	Centre for Resource and Environmental Studies, and School of Resources, Environment and Society, Australian National University
Peter Davies	Archeology Program, La Trobe University
Mark Elvin	Research School of Pacific and Asian Studies, Australian National University
Denise Gaughwin	Forest Practices Board, Tasmania
Roger Heady	Electron Microscopy Unit, Australian National University
Peter Holzworth	Ferny Hills, Queensland
Sybil Jack	Department of History, University of Sydney
Elisabeth Johann	St Margareten, Austria
Kevin Kiernan	Forest Practices Board, Tasmania.
Stephen M. Legg	School of Geography and Environmental Science, Monash University
Jane Lennon	Heritage Consultant, Hamilton, Queensland
Brenda Libbis	Mt Waverley, Victoria
Daniel Lunney	NSW National Parks and Wildlife Service
Alison Matthews	NSW National Parks and Wildlife Service

Peter MacFie	Public Historian, Dulcot, Tasmania
Kaye MacPherson	Department of Geography and Environmental Studies, University of Tasmania
Jenny Mills	Darlington, Western Australia
Anitra Nelson	Social Science and Planning, RMIT University
Robert Onfray	Gunns Ltd, Ridgley, Tasmania
Jan Oosthoek	Department of History, University of Stirling, Scotland (now Georg-August Universitaet, Germany)
Stefan Petrow	School of History and Classics, University of Tasmania
Debbie Quarmby	History Programme, School of Sociel Inquiry, Murdoch University
Libby Robin	Centre for Resource and Environmental Studies, Australian National University
Brian Rollins	Consulting Surveyor, Burnie, Tasmania
David Ryan	Forestry Consultant, Boambee, NSW
Paul Star	Department of History, University of Otago, New Zealand
Alison Specht	School of Environmental Science and Management, Southern Cross University
Brett J. Stubbs	School of Environmental Science and Management, Southern Cross University

Preface

This is the fifth volume in a series that records Australian forest history across time, place, topic and approach. The series was started in 1988 at a time when the public's interest in the forests was quickening but could turn to only a few books for deeper understanding. Most notable were Eric Rolls' 1981 history of the Pilliga forests of New South Wales, *A million wild acres,* and Les Carron's 1985 *A history of forestry in Australia.* Beyond these were journal articles, local histories, a few theses, several portrayals of timber tramways and an increasing number of studies in the 'grey' literature of government agencies. The Australian Forest History Society was formed to enable people to share their research and knowledge in national conferences and publish a series of proceedings.

Australian forest history embraces all the interactions between people and forests or woodlands. Aboriginal use and management, biographies, environmental change, fire, forestry, heritage studies, historiography, industry, land use, politics/policy, science, social history, social values and transport history are all topics which forest historians have addressed. This diversity reflects that of the forests and their historical patterning, and the varied approaches and experience that the authors bring.

The fifth national conference of the Society was held in February 2002 in Tasmania. Although much of the landscape has been transformed by human action over the last two centuries, Tasmania remains proportionately Australia's most forested State. It has a rich forest history: its Aboriginal heritage is poignant and continuing; extensive areas have been placed in conservation reserves and its wood-using industries have flourished. Eight of the papers in this volume record aspects of this and twelve deal with forests in other parts of Australia. Forest historians here are also alert to the work of those elsewhere and themes in forest history internationally include papers on New Zealand, Papua New Guinea and the United States. A long perspective in forest history starts this volume with a set of Chinese poems, dating back over two millennia. Three papers illustrate how the march of science from nineteenth century botany to the recent discovery of the Wollemi pine informs our understanding. Another, presented as a play, depicts a bitter labour dispute of the 1920s. It was performed for the conference in Geeveston, Tasmania, where the dispute actually took place.

John Dargavel, Denise Gaughwin and Brenda Libbis

Themes in forest history

1

Chinese poems on forests and trees

Mark Elvin

The heartland of ancient and classical Chinese culture, in the inner northwest, was created by the destruction of forests, and gloried in it. Here are the opening lines of an anthem in the *Scripture of Songs*, close to three thousand years old now, which claimed the divine right of the Zhou house to rule. They are unambiguous in their enthusiasm for destruction. It is the basis for development:[1]

Majestic indeed was our Lord God Above
As He gazed down in splendour upon this, our world.
The four quarters lay under His rule, and His judgement,
That the people below should live undisturbed.

But neither Xia's state, nor successor Shang dynasty,
Had proved able to govern the Empire correctly.
So He scrutinized deeply, appraised, and considered
All the other realms spreading north, east, south, and west.

This done, His verdict came into effect:
Detesting Shang's style so befouled by excesses,
He shifted to us, in the west, His affection,
And bestowed on our Zhou—a place we could settle.

We uprooted the trees then. Lugged trunks aside,
Those that, dead, still stood upright, and those that had toppled.
We pruned back the branches, or flattened entirely
The stands in long lines and the thick-tangled coppices.

We cut clearings among them. We widened the openings
Through tamarisk forests and knob-jointed cane-trees.
We tore from the soil, or else lopped back, groves
Of wild mulberry bushes and spiny Cudranias...

When our Lord God Above had examined these hillsides,
We ripped out oaks whose leaves fall, and those green the year round,
Clearing spacious expanses amid pine and cypress.
Here God made our state, and our sovereign, His counterpart.

At the same time, the Chinese were not insensible to the overpowering majesty of ancient forests. Some lines in the fantasizing rhapsody *Master Emptiness* by Sima Xiangru, who lived in the second century BCE,[2] describe the trees in the wetlands that once lay on either side of the central Yangzi.

Clouds and Dreams Marshes are in circumference
Three hundred miles.
In their midst there are mountains.
Labyrinthine their windings,
Sharp-pointed their peaks.
Below the irregular summits and pinnacles
Sun and moon pass occulted in partial eclipse.
In crisscrossing confusion
They oppose the dark clouds.
Stagnant water forms pools, but flows where it slopes,
To submit at the bottom to rivers and streams...

Dark woods rise to its north. Gigantic their trees:
Machilus and camphors,
Peppers, cassias, magnolias,
Wild pears, cork trees, and poplars,
Chestnuts, sour pears, date-plums,
Pomelos, mandarins—spreading sweet fragrance.

And he goes on to describe the animals and birds.

Forests and trees were seen as resources and amenities for great cities. In the third century CE, Zuo Si wrote a rhapsody on Chengdu, the capital of the Sichuan region,[3] in which he says of the region to its south:

Valleys hug one like arms; gullies close round like mouths.
Crests, straight-ridged or circling, are tangled and twisting,
Interposing their rocks and deflecting the clouds,

The dense forests a haze under bluish-green mists,
The lone summits imposing, rising uplifted.

Then he turns to the trees that grow here, mostly evergreen broadleaves:

Sturdy multiply-knotted bamboos climb up the ranges of mountains.
The cinnamon-cassias gaze—down on the cliffs far below them.
From rifts traversing the slopes, are dragon's-eye trees, springing out.
Likewise, from cracks in these banks, there are lichee trees growing.

Their green foliage masses like clouds, when they thicken.
Their fruits swell, and hang widely scattered, red-purple.
Yet when winter's most chill, still their leaves do not wither,
But shine, splendid as ever, amazingly verdant.

The 'multiply-knotted bamboos' were Qiong bamboos, often used for walking sticks. What I have called the 'cinnamon-cassia' was a 'cassia' whose bark was said to roll up like a length of bamboo, which suggests the Chinese cinnamon, the bark from whose smaller branches when shaved off will dry into quills or tubes in the sun. The 'dragon's-eye tree' is the longan (*Nephelium longana*), a fruit tree that often grows where the lichee does. Looking to the north of the city, Zuo observes:

So-called 'Excellent Fish' are produced by the fish-caves of Bing,
And up north, in the Valley of Bao, is where one can gather good timber.
Among the trees found here are the cinnamon and the magnolia,
Two kinds of catalpa, the narrow-leaved osier, Fortune's paulownia,[4]
Firs and thorn-bearing junipers, windmill palm trees and coconuts.
Machilus and camphor lie hidden, deep on the valley-floor bottoms,
While magnificent cypress, and pine, flourish up on the mountainous tops,
Their long trunks and their branches uplifted so high, unbelievably
Fanning the clouds flying by as they brush on the aethers.

The presence of the windmill or fan palm (*Trachycarpus*) this far north at this time is surprising but not impossible. Pollen analysis shows it was common in Sichuan in the warmer climate of 10 000 BP.[5] The presence of the coconut defies credulity, but I have not altered the sense of the text arbitrarily as the dictionaries and Qu Taiyuan's commentary all agree on it. The 'thorn-bearing juniper' is unclear but may be *Juniperus rigida*, one Japanese name for which is 'rat-thorn'.[6] A point to note is that, by this period, Chengdu's catchment area for timber extended at least three hundred kilometres north from its walls. Within the city itself there was a profusion of fruit trees:

Looking across at each other, the roof-slopes rise up to beamed ridges.
Homes touch one another, adjacent, under mulberry trees and catalpas.
Families can draw up their brine—from wells that tap into salt springs;
Households have orchards that boast of both grapefruits and mandarins.[7]

Their gardens have loquats, and red Hubei crab apples,
Pears from the mountains, persimmons, and sweet-tasting oranges,
Mountain peaches as well, planted out in straight ranks,
And plums, common and *mume*, patterned net-like and orderly.

These diverse kinds of fruit trees, their bud-cases bursting,
Are alike in their splendour, contrasting in colour.
In springtime the red cherry's blossoms come first;
White crab-apple flowers are full-blown in summer.

When the seventh-month Firestar inaugurates autumn,
The cold wind gets an edge,
While white dews condense,
And miniature crystals of frost begin forming.

Purple pears are awash then with succulent juices.
Fine fissures appear in the hazelnuts' shells.
As bunched grapes, over-ripe, rot to gunge in confusion,
Pomegranates compete to split open their fruits.
Their sweet flavour endures till they gently drop off,
The strength of their perfume oppressing our nostrils.

This passion for cultivating trees has to be put into counterpoint, not contrast, with the passion for clearing untamed forests. Arboriculture is a part of bringing landscapes under horticultural and hydrological control. Untamed forests were seen as another world, sometimes magnificent, almost always fearsome.

More than a millennium and a half ago, the aristocrat, poet, and estate-developer Xie Lingyun wrote an environmental poem on the southern side of Hangzhou Bay.[8] In some ways it is only surpassed as a nature poem, and barely, by Lucretius. Thus the section on bamboos attempts a rough-and-ready taxonomic approach. In addition to differentiating the shapes of the leaves, and the colours, of otherwise similar species, Xie also points to differences in the style of growth. Thus delicate 'streamside' bamboos did not form dense groves, whereas the heavier 'stony-ground' varieties did.

One Arrow Bamboo has broader leaves. The other one's leaves are slender.
The four Bitter Bamboos are distinguished by colour—green, white, purple, and yellow.

Different soils give their nourishment to the streamside and to the stony-ground species.
The first, lightweight, we use for connecting ties. The second, heavy, for beams.

They rise elongated and trembling—graceful-armed girls dancing merrily—
Either growing in clustering thickets, or as multiple delicate stems.
Moistened by dew when the sun goes down, they grow chilled and sunk in the shadows.
When aroused by breezes at sunrise, they fill with a pure vitality.

Local trees form the coda to Xie's survey of plants. Identifying them often remains problematic, at times even at the level of the genus. 'Southernwood' is *Malachus nanmu*. The *Cudrania* is *triloba*, a thorny tree whose leaves can be fed to silkworms when mulberry leaves are in short supply. I have added amplifications based on the practice of the times about the nature of two trees, the *Broussonetia* and *Ailanthus*.

As to its trees—

There are pines, cypresses, sandalwood, and oaks with chestnut leaves.
Also Paulownias and elms, *pian* 'laurels' and southernwood 'cedars',
Dong, *Cudrania*, wild-growing mulberries, and the paper-source, *Broussonetia*,
Catalpa, tamarisks, and *Ailanthus*, whose leaves stink but whose nuts can be eaten.

Some are robust, and some soft. They have natures that greatly differ.
Their substances vary. Some hardwoods; others fragile or brittle.
Some grow low down; some on heights. Some like loams; others soils of low productivity.
They seek their particular requirements, having their own specificities.

Trunks, of two arms-lengths girth, block the sight of the mountain summits.
Perilous twigs rise a thousand fathoms, above the void of the gulfs.
They scale the mountainous ridges. They stand there, drawn up to full height,
Or shelter deep in the torrent gorges, their lush foliage branching widely.

Down the lines of the lengthy valleys, boughs balance the slope with their slant,
While clumps plunge their roots into boulder-heaps, and radiate twigs intertangling.
Where the sun's dazzle's mirrored back from the streams, they seem to grow even brighter,
And their aethers congeal in an atmosphere closing round us on every side.

Confronting the harshness of the cold, the trees are a fresh-tinted green.
Then imbibing the gentle warmth, they wax fat—and their fragrances are sweet.

Next they bid farewell to their fallen leaves when autumn is nearly done,
And wait till the early days of spring with their stamens enclosed in their buds.

This passage conveys the environmental abundance of central-coastal China in the early Middle Ages, and for us, by implication, the relative environmental poverty of those that followed. The human habitat here was still in many ways the forest.

By the high Middle Ages forest destruction was familiar enough and evocative enough to be used as a powerful metaphor in a political poem. Liu Zongyuan, a philosopher and essayist who lived under the Tang around the turn of the eighth and ninth centuries CE compared the state felling of trees to the destruction of men of talent at Court:[9]

The official guardians' axes have spread through a thousand hills,
At the Works Department's order hacking rafter-beams and billets.
Of ten trunks cut in the woodlands' depths, only one gets hauled away.
Ox-teams strain at their traces—till the paired yoke-shafts break.

Great-girthed trees of towering height lie blocking the forest tracks,
A tumbled confusion of lumber, as flames on the hillside crackle.
Not even the last remaining shrubs are safeguarded from destruction;
Where once the mountain torrents leapt—nothing but rutted gullies.

Timbers, not yet seasoned or used, left immature to rot;
Proud summits and deep-sunk gorges now—brief hummocks of naked rock.

'Official guardians' was a title that had in archaic times referred to those whose task it was to *protect* natural resources, including animals. Now, more than a thousand years later it had been transformed, by a twist of bureaucratic spin-doctoring, into meaning almost the opposite: officials responsible for providing the Court with timber for its new buildings.

The far south

Botanically, the far south of China had as much in common with the tropical worlds that lay further south as it did with central, let alone north, China. Already by 304 CE, Ji Han had written *The forms of the plants and trees of the South* because, as he said, 'the people of the central regions are often unfamiliar with their nature'.[10] The far south was an exotic experience for northerners. They found Chinese spinach[11] being grown on tethered rafts, and fabrics woven from the fibres of banana plants and bamboos.[12] And novel foods and addictions, like the chewing of betel nut.

Betel is the fruit of the betel-nut palm,[13] and the fruit is chewed together with the leaf of the betel-pepper[14] and lime, often ground from oyster shells.

It produces a mild intoxication, and is thought to improve the digestion. The saliva of those indulging in it becomes red, and is often spat out. The addiction seems harmless, but unaesthetic.

The trees can grow over a hundred feet high, with trunks that have an almost constant girth from bottom to top. They have no branches until the fan of leaves shaped like banana leaves that spreads out from the highest point, and the partially enfolding bracts, or 'spathes', that contain the fruit. The poet and politician Su Dongpo, exiled to the far south in 1094, evoked the surprise of the outsider confronting this novel world in the first part of his poem 'Eating Betel':[15]

The moon shines down on the branchless trunks of the forest
Whose night-time columns rise on tens of thousands of plinths.
High up among the cloudbanks wave the distant fans of fronds
Covering us with darkness, in this summer heat just before winter.

From aloft the spathes droop down, enclosing their load of fruits,
Each fruit-base ringed with red spines, providing for its defence.
During rain at night one might think one glimpsed the azure dragon's brood,
Or else imagine them, in the wind, to be purple phoenix eggs.

Once they have dropped to the earth, looking as if they are splitting,
They continue to ripen on their own, encased within their skins.
When a visitor from the north arrives he finds them unfamiliar,
But when urged by local custom to eat, it is hard for him to resist!

One is nervous of letting off gas from one's hollow internal places,
And as one takes one's first bite, one may well half-want to spit.
When one sucks upon the juices, one detects a faint sugary taste,
But when one lets one's teeth sink in, the flavour is also bitter.

If someone's facial demeanour has become too severe and cold,
The savour no longer conveys its old seductive sweetness.
For removing assertive arrogance it merits an encomium,
Yet when it gives one a boost, one's courage deserves esteem.

Often, when stubborn malarial fever sets in and will not vanish,
Betel is the restorative that leads back to healthy vigour.
Of the medicines we have in reserve, it may well be one of the handiest,
And, in the catalogue of fruits, are there any more beneficial?

The far south was a new landscape, with new flora and foods, and new mood-altering and medical drugs.

Wood

By the last three or four hundred years before modern times the scarcity of wood for fuel and construction was the daily price paid for more than two thousand years of deforestation. For many people in many areas life had become a constant struggle as a result. Typical are some lines written in the Qing dynasty on Shizhou in Shanxi province in the northwest:[16]

Limping through fearsome defiles, the old men return
With bundles on their shoulders of the wood they need for burning.
To draw their water the young married women must travel a long way off
And far down dip their earthenware crocks into the deep-sunk torrents.

It was the same story in the lower Yangzi region. Jiang Tingyi wrote six poems on various kinds of shortages here, among them one on fuel for cooking, which ends:[17]

When we trudged along those ridges not so many months ago,
Like upright clusters of arrows stood the trees upon the hills.
All that we can see today, as we pass through the lands below,
Are those same slopes in the distance, but sharp-edged now, and stripped.

The common folk who farm have nothing left for fuel,
And set the wooden axles of their water-pumps ablaze.
They have no prospects after this. Husbandry is useless.
So they smash their shacks and sell the planks inside the city gates.

Not necessarily an exaggeration, since other references to this practice can be found.

The difficulty in finding timbers large enough to build ships led the Manchu-Qing Government to commandeer trees from gardens and grave sites. According to a poet writing near the end of the seventeenth century:[18]

To build ships in Jiangnan demands they fell huge trees.
So strict warrants go to Zhejiang, and to Hedong and Hexi:[19]
'Cut elms and willows in garden groves that are ten spans around,
And the hundred-foot-tall conifers that stand by burial mounds!'

Whatever great families, and titled clans, can do, they still begrudge,
Yet how can the quotas be obtained from yokels of little substance?
The county officials mark off trunks, their tallies held in their hands,
Their orders to Yangzi villages throwing humble folk into panic.

The remotest mountains and boundless marshes are already scattered
wreckage,
In vain, amid the winding lanes, people cherish their scattered hedges.

He was shocked that graveyards, previously spared by imperial decree, were no longer exempt.

Yan Ruyi's 'Song of the Timber Yards', probably written early in the nineteenth century, also reflects the anxieties felt at this time about resources runnng short.[20] Several points need prior explanation. The Zhongnan are mountains just south of the Wei river in the northwest, and crowned by Mount Taibai which rises to over three thousand metres.[21] The reference to two capital cities at the end of the second stanza is a literary turn of phrase that comes from those earlier dynasties, such as the Han and Tang, when there were in fact two capitals. This was not the case under the Qing. The 'sky-trucks' and 'sky-bridges' are said in an author's note to have been made from wooden frameworks; the first may have been an early form of cable skidder. My invented terms 'water-jacks' and 'timber-monkeys' are guesses for otherwise untranslatable words that seem to refer to the men who took care of the logs floating down the rivers, and to those who pulled them out at the end of their journey. Ox Mountain was a deforested hill referred to by the philosopher Mencius in the fourth century BCE. He argued that its treeless state was no more natural than the state of the men was in his degenerate times.

Extending West, the Zhongnan twist and wind
Until they crosswise meet with Mount Taibai,
A bluish darkened green, more than three hundred miles
Of intertwining shrubs against the sky.

Famed as materials, straight firs, *Castanea* trees,
And pines and cypresses, verdant throughout the winter,
Are, when collected, useful—to meet the people's needs,
And shipped and traded in both capital cities.

To serve as beams or rafters is only for logs that are massive,
The destiny of slender lengths is to end in cookhouse flames.
Merchants, since well endowed, can provide investment capital;
And calmly contrive returns beyond all expectations.

The supervision of accounts is under head clerks' direction,
While engineers survey and gauge for operations in hand,
The bookkeepers enter records—of payments—into their ledgers,
The labour contractors organize sworn brethren into gangs.

Several fathoms in girth are the multitudinous trunks.
Once the axes are laid aside, cables are used to haul them,
Dragged up and down by 'sky-trucks' over the slopes and summits,
And ferried, along 'sky-bridges', across ravines and gorges.

The boards, on porters' backs, tax their strength with their heavy weight,
Men who are nicknamed 'mules' because of their sturdy endurance.
The accumulated logs will wait, till the river's again in spate,
And 'water-jacks' send them on their way—down the ebullient currents.

'Timber-monkeys' pile the logs where the river valleys open,
Stacking them up to towering heights like wooden city walls.
A single yard has a numerous force of workers at its disposal.
The largest can bring together a thousand of them, or more.

Opening the forest little by little is how they make their way forward,
Under such disciplined control they seem to be a battalion...

Half of these gangs of workers are wandering, homeless, men.
Great numbers depend upon these jobs to provide them with a life.
Some years ago, when there arose the stirrings of rebellion,
No hesitation held them back from joining in the fighting.

By relying on tough commanders, the insurgency was throttled.
Those who originated revolt were all of them put to death.
But how can we prohibit what brings the people profit?
Compassion is also needed when livelihoods are threatened.

Opening forests and gathering timber depend on the merchants' funds,
And also rely on the weather being, time and again, propitious.
When foodgrain's cheap and their workers find the cost of living no trouble,
They sit at their ease and lick their lips at the thought of the year's-end profits.

Returns accrue to the businessmen that are bigger than their investment,
And mobs of workers congregate like swarms of summer insects.
But it's not so easy to predict when flood or drought will occur.
The alternation is sudden between bumper harvest and dearth.

If, for a single year, the cost of food has gone up,
Then, in the year that follows, to continue producing is tough.
When eleven litres of millet have a price of a thousand coppers,
The merchants' reserves are inadequate, and jobs come to a stop.

Lumberjacks who lived by their muscles will scatter and disperse.
How could they supply themselves? Or themselves direct the work?
Could Ox Mountain again be beautiful, clear-felled so long ago,
When arid, bare, reflection is now the state of its slopes?

True, it is sometimes said, when an old-growth forest's cut,
That one can cultivate the soil by putting it under the plough.
But do those who say this realize, when lumber's taken out,
That for every trunk that's cut, hundreds of men mill about?

The twisting roots plunge down, ten feet or more in depth.
If you sow grain in such a place, how many stalks will you get?
Still in the stony tilth lingers the chill of the heights.
The usual cereals we eat need other land and dykes.

Late-imperial Chinese commercial capitalism was already close to its early modern Western counterpart. The market dominated production, including the hiring and firing of a workforce that had no security. There was a complex, literate and numerate, internally specialized, managerial staff. The technology used was advanced for its time. The state picked up the tab for the social dislocation caused by business activities. Useful economic needs were being serviced, but the environment was being mauled and exploited in an unsustainable way. And with a profit-sustained stamina that made the bureaucrats of earlier times appear intermittent and inefficient despoilers in comparison.

Notes

1 Karlgren, B. 1950. *The Book of Odes: Chinese text, transcription and translation.* Stockholm: Museum of Far Eastern Antiquities (# 241). Alternative readings of the second half of the second line of the last verse would be 'and the thorns with white flowers', or just 'oaks'. The interpretation adopted depends on S. Couvreur 1890/1911. *Dictionnaire classique de la langue chinoise.* Hejianfu: Imps. de la Mission Cath., 459. that is 'Yeuse' for the *yu* in *zuo yu*, and the sense of the context: the song is describing massive trees, not shrubs. Like the other translations, this uses vowel-rhymes in place of the full rhymes generally characteristic of the Chinese, and inserts em dashes to show the mid-line break, or caesura, typical of most Chinese lyrics, when its place is not obvious from the flow of the words.

2 There is a not very wonderful translation into German by E. Von Zach 1958. *Die Chinesische Anthologie*, Cambridge MA: Harvard-Yenching Institute Studies, Harvard University Press: 103-107. The Chinese texts I have used are from the *Shi ji* [Records of the Grand Historian] Han—Reprinted 1959. Sima Qian. Beijing: Zhonghua shuju, 'Sima Xiangru zhuan' [Biography of Sima Xiangru] 57: 3002-4, and *Wenxuan* [The Chinese anthology]. 6th century. Xiao Tong, comp.; Li Shan annot. 1181 edn., reprinted 1974. Beijing: Zhonghua shuju: 4 cases: 7:17a-24b.

3 I have used *Wen Xuan* 4:13b-27a, and also Qu Tuiyan 1964. *Han Wei Liuchao fu xuan* [Selected rhapsodies from the Han, Wei, and Six Dynasties period], reprinted 1979. Shanghai: Shanghai Guji chubanshe for its notes.

4 Named for Robert Fortune, a nineteenth-century agricultural and botanical spy who secured the tea plants from China on which the Indian tea industry was later based.

5 Lin Hongrong 1985. 'Sichuan gudai senlin-de bianqian' [Changes in the ancient forests of Sichuan] and 'Lishi shiqi Sichuan senlin-de bianqian' [Changes in the forests of Sichuan during the historical period], in 4 continuous parts, *Nongye kaogu* 9.1 and 10.2, 162.

6 *Cihai* encyclopeadia. 1947. Shanghai: Zhonghua shuju. One-vol. edn., 673.

7 Strictly, the 'grapefruit' should be 'pomelos'.

8 I have used the text in the anthology *Quan shanggu sandai Qin-Han liuchao wen* [Complete literature from high antiquity, the Three Dynasties, the Qin and Han, and the Six Dynasties] 1965. Beijing: Zhonghua shuju, Song, 'Xie Kangle jixuan,' fu, 1a-11b. Variant readings from Gu Shaobo and Wang Honglu 1987. *Xie Lingyun-ji jiaozhu* [The works of Xie Lingyun with variant readings and notes]. Zhongzhou Guji chubanshe: n.p. [Henan], 318-376, have also been consulted. A number of references have also been identified from the invaluable J. Frodsham 1967. *The murmuring stream: the life and works of the Chinese nature poet Hsieh Ling-yün (385-433), Duke of K'ang-Lo.* University of Malaya Press: Kuala Lumpur. 2 volumes.

9 Liu Zongyuan, Tang, 1978. *Liu Zongyuan ji* [Collected works of Liu Zongyuan]. Taibei: Zhonghua shuju: 43:1240-1, 'Xing nan lu'.

10 Ji Han, 4th century CE, Nanfang caomu zhuang [The forms of the plants and trees of the South]. Translated by Hui-lin Li 1979 as *A Fourth Century Flora of Southeast Asia.* Hong Kong: Chinese University Press. 32.

11 *Ipomoea aquatica.*

12 Ji Han, *Plants and Trees of the South*, 15-17.

13 *Areca catechu.*

14 *Piper betle.*

15 Su Dongpo [Su Shi], Song, 1983. *Su Dongpo quanji* [Complete works of Su Dongpo]. Seoul: Hanguo wenhua kanhanghui. 7 collections in 13 vols, XI: 79-80.

16 By Qian Yikai. In the 1869 *Qing shi duo* [The Qing bell of poesy] (originally *Guochao shi duo*). Zhang Yingchang (ed). Reprinted 1960 Beijing: Xinhua shudian: 7-8. Hereafter '*QSD*'.

17 *QSD* 446.

18 Wu Nongxiang. In *QSD* 246.

19 Respectively, Zhejiang (SE), southwest Shanxi (NW), and Shaanxi and Gansu (NW).

20 *QSD* 932-3.

21 They run from about 110° E to about 108° E. Taibai is at about 107° 30' E.

2

IUFRO forest history research: stages and trends

Elisabeth Johann

Introduction

The society of almost every country in the world will eventually recognise the importance of forests for our survival and become aware of the damaging human impact on forest ecosystems. Society's ability to shape its future will depend on how it manages this limited resource, the forest. Sustainability and sustainable development can not be discussed without a backward glance. The historical background of the present forest and its socio-economy has to be analysed in order to work out criteria and indicators for a sustainable development. About 320 members of the Forest History family of the International Union of Forest Research Organisations (IUFRO) have always been willing to make the necessary information available and want to take part in the present discussions, for instance by preparing the historical background information for nature conservation and certification.

Short history of IUFRO

Set up in 1892, the International Union of Forest Research Organisations (IUFRO) is the oldest international scientific union. Its foundation resulted from the need to unify the character of forest experimental systems and to make the methods of measurement and results comparable so that they could be developed and consolidated. International congresses were organised periodically to fulfil these tasks.

Until 1929 the association had no special organization except for the general meeting and the chairperson. As it evolved and took on more tasks, it increasingly specialised and separated into different compartments and sections covering the expanding fields of forest research. In 1979 these sections were placed into special groups of research topics (divisions), which were in turn subdivided into individual subject groups, research units and working parties.[1] This process has not yet come to an end and will be adapted to the changing needs of science and society.

History of the Forest History Research Unit

The foundation Forest History Section, later called a Subject Group and at present called a Research Unit, dates back to 1961. It shows approximately 40 years of fluctuating development. From the beginning, the founders (especially Prof. Mantel from the University of Freiburg in Germany) were engaged in identifying the research emphases, both international and inter- and multi-disciplinary. The first joint task was preparing guidelines for scientific papers dealing with the history of forest stands and forest districts. This was aimed at showing the connection between different scientific methods. The exchange of literature and archival material as well as the working party on Forest Terminology which was also planned in the 1960s has not been accomplished due to staff shortages and restricted financial resources.

At the beginning of the 1970s the subject group nearly failed, while attempts to lead it closer to economic history did not really succeed either. However, in 1979 it received a new impetus initiated by a well-attended, successful meeting in Nancy, France, organised by Professor Devéze. The interest in forest history shown at this conference signalled not only European research but also participation from other countries. It led to a continuing expansion and internationalization of forest history as well as to an increasing inter-disciplinarity.

The Forest History Group organises scientific meetings and facilitates collaboration on such events by making appropriate information available. It

assists communication between research disciplines in forest and environmental history. This includes the exchange of archival material and information about new publications, co-operation in scientific projects and the publication of proceedings of meetings. It produces *News of Forest History* which provides information about research activities and institutions in individual countries.

Organisation of the Forest History Research Unit

The research unit on forest history is presently subdivided into four teams. Although they co-operate closely, they set different emphases with regard to their topics which helps to guarantee both inter-disciplinarity and the implementation of different methods. This current structure (Table 1) has existed since 1996 and will probably continue until 2005 when it will be reviewed and hopefully adapted to future requirements.

Table 1: Structure of the IUFRO Research Unit 6.07 Forest History (1995–2005)

Research Unit 6.07, Forest History
Coordinator: Elisabeth Johann, Austria
Deputy: Paul Arnould, France
Deputy: Egon. Gundermann, Germany
Working Party 6.07.01, Tropical Forest History,
Coordinator: Ajay Singh Rawat, India
Deputy: Richard Grove, Australia
Working Party 6.07.02, Social and Economic Forest History,
Coordinator: Mauro Agnoletti, Italy
Deputy: Steve Anderson, USA.
Working Party 6.07.04, Ecological History
Coordinator: Charles Watkins, UK
Working Party 6.07.05, History of Hunting Culture
Coordinator: Sigrid Schwenk, Germany

Note: Contact details are at http://iufro.boku.ac.at/iufro/

The present emphases in forest history are on social and economic aspects, and on human impacts and their ecological modifications to the forest. The history of forest hunting was not an original component of the subject group, but a working party Hunting Culture was started in 1996 to enable interesting points of contact to be developed, especially with the developing countries of 'the South'. The working party on Tropical Forest

History was initially co-ordinated by Professor Tucker (USA) and Dr Dargavel (Australia) in 1981.

While the organisation of the special subject groups, research units and working parties is structured in accordance with the IUFRO guidelines, increasing numbers of members are affiliated with different scientific fields and institutions. They constitute an alliance of all those researchers working in the field of forest and environmental history. This modification of the structure of members is also generally noticeable within the whole IUFRO community which has gradually become an international organization of individual members. This shift in membership is especially noticeable in Forest History and is one of its characteristics. Its members are drawn from anthropology, cultural and landscape history, environmental history, forest history, general history, geography, linguistics, historical settlement geography and natural sciences. Libraries and archives at national, local and campus levels represent about ten per cent of the membership.

Activities

Within the IUFRO community, the specific goals and topics set out by the individual research groups and working parties are generally left to the individual coordinators. In recent years, the forest history group has organised meetings and conferences, fostered scientific co-operation (projects, exhibitions and other meetings), exchanged archival material and news of new publications, and published the *News of Forest History*.

In assessing the activities, one has to take into account that there are a number of projects that could be undertaken but which lack financial and staff resources. Although historical studies are so relevant to the issues of sustainability and sustainable development, the group has not yet illustrated their importance clearly enough to obtain research funding from the European Union or other major international bodies. It is to be hoped that this tendency will change, otherwise forest history research will decrease, cease or be carried out by other disciplines.

Meetings 1996–2001

The mission of IUFRO and its Forest History Research Unit is to promote international cooperation in forestry research and related sciences and to establish and strengthen partnerships between developing and developed country institutions and researchers. Forest History has always paid attention to interdisciplinary teamwork within and outside of IUFRO members. Since

the foundation of the group, the organisation of meetings aimed at specific topics has been regarded as an appropriate and successful tool to strengthen this cooperation and partnership (Tables 2 and 3).

Table 2: IUFRO Meetings on Forest History 1996–2001

May 1996	*Multiple Use Forestry from the Past to Present Times*. Gmunden, Austria. Research Unit 6.07. 40 participants, 20 papers published.
May 1998	*History and Forest Resources*, Florence, Italy. Working Party 6.07.02 in co-operation with Italian Academy of Forestry Science. 120 participants, 90 papers published.
January 1999	*Contributions of Science to the Development of Forest Policies*, Pretoria, South Africa. IUFRO Division VI Conference
August 2000	*Forests and Society: The Role of Research*, Kuala Lumpur, Malaysia, IUFRO World Congress. Research Unit 6.07 sessions on Tropical Forest History, and Social Changes and Forests, 70 participants, 16 papers published.
October 2001	*History of the Mountain Regions of the World*, Nainital, Uttaranchal, India. Working Party Tropical Forest History 6.07.01 and Research Unit 6.07. 25 participants, 20 papers published

Table 3: Meetings organized by IUFRO members with participation of Research Unit 6.07, 1996–2001

September 1996	*Advances in Forest and Woodland History*, Nottingham, England. University of Nottingham, Working Group 6.07.03 Ecological forest history. 60 participants, 15 papers published.
February 1998	*Aufbau und Auswertung "Langer Reihen" Erforschung von historischen Waldzuständen und Waldentwicklungen*, Blaubeuren, Germany. University of Tübingen in cooperation with IUFRO Forest History Group 6.07. 35 participants, 20 papers published
October 1998	*Forstlicher Zentralismus und Forstlicher Regionalismus*, Tharandt, Dresden, Germany. Tharandt University in co-operation with Groupe d'Histoire des Forêts Francaises and IUFRO-Research Group 6.07. 10 papers published
September 1999	*IX Congreso de Historia Agraria*, Bilbao/Spain. Universidad del Pais Vasco.
September-October 1999	*La Sapinière: du mythe de la ligne bleue aux enjeux actuels*. La Bresse (Vosges), France. Groupe d'Histoire des Forêts Françaises.
March-April 2001	*Making Environmental History relevant in the 21st Century*. Durham, North Carolina, USA. ASEH and Forest History Society (USA) Conference. IUFRO Forest History Group panel session, Socio-economic and forest ecosystem change in Europe (19th–20th century). 40 participants, 3 papers published.

In recent years the international exchange of forest history research has been remarkably intense and covered several fields of forest and environmental history. The meetings were characterised by an interdisciplinary approach focusing on economical and social aspects of historical human impact on forest resources and on different methods of research and analysis.

Scientific teamwork

Co-operation within the community is mainly based on personal contacts between members, follows a flexible scheme, and is not institutionalized. Nevertheless, the results are quite effective, although a co-ordinated expansion appears extremely desirable. Cooperation occurs in the preparation of scientific meetings by joint publicity, the publication of the announcements and calls for papers on the group's home page and by exchanging mailing lists of potentially interested researchers.[2] Some exchanges of archival material occur and information about new publications is circulated.

On closer examination, the financial resources available for joint work on forest history projects could be considerably improved, particularly in relation to the ongoing debate about certification to secure sustainable forest management methods. Although forest history could make a considerably greater contribution, some positive results can be noted. One was the joint preparation and presentation of the interdisciplinary and international panel session 'Socio-economic and forest ecosystem change in Europe (19th–20th century)' with presenters and moderators from Italy, Switzerland, Sweden and Austria. This helped position forest history within environmental history. Another success story was the preparation of a long entry on the 'History of Forestry' for UNESCO's *Encyclopaedia of Life Support Systems* by a team from Australia, Austria and Italy. This covered community forestry, industrial forestry, silviculture, social forestry and sustained yield.

Recently, a joint working party affiliated with different institutions has been established to investigate the history of past land use in Europe within the framework of an international RPC-Conforest project. This project will investigate the question of conversion of pure secondary Norway spruce forests on sites naturally dominated by broadleaves for the sustainable fulfilment of society's needs. It will focus on the changes in forest ecosystems caused by human influences that took place in many parts of Europe mainly in the nineteenth and twentieth centuries. The studies will concentrate on conditions in the past, will examine the multiple determinants and will delve into the historical interdependencies of socio-economic and ecological development. Such projects show that it is

important to evaluate the major driving forces of landscape changes in order to make informed decisions about the use and management of the land. Performing such evaluations is a complicated task, as landscapes are shaped by interconnected and temporally dynamic cultural, socio-economic, biotic, and abiotic impacts.

Publications

State of Knowledge reports

IUFRO established a Task Force on Environmental Change and a Research Series of volumes, published by CAB International. The Series aims to offer a single uniform outlet for high quality publications dealing with forestry and forest resources arising from major IUFRO meetings. The second and third volumes are based on presentations given at the 'History and Forest Resources' Conference held in Florence in 1998 (Table 2).[3]

News of Forest History

Table 4: *News of Forest History* 1996–2002)

Year and issue	Topic
1996 (23/24)	*Stages and Trends in the Interaction between Economic Development, Forestry and Environmental Protection from the past to present times.* Proceedings of Group Session 6.07 in the IUFRO World Congress, Tampere, Finland.
1997 (25/26)	*Multiple Use Forestry from the past to present times.* Proceedings from the Symposium Ort/Gmunden, 2-4 May 1996
1998 (27)	*Forest History in Germany*
1999 (28)	*Forest History in Romania*
2000 (29)	*Forest History in Poland*
2001 (30/31)	*Social Changes and Forests.* Proceedings of the Group Session 6.07 in the IUFRO World Congress, Kuala Lumpur, Malaysia.
2002 (32)	*Socio-economic and forest ecosystem change in Europe (19th–20th century).* Proceedings of the Panel discussion at the Joint Meeting of the American Society for Environmental History and the Forest History Society (USA) Durham, NC, USA, 28 March-1 April 2001.

The *News of Forest History* booklets were set up in the 1970s by Prof. Killian and have been carried on by myself. Some issues contain information

about the state of forest history of a certain (usually European) country including teaching, research, publication, museums and exhibitions. Other issues contain the proceedings of forest history meetings. Taken together over a period, they provide a comprehensive view of the state of forest history. The issues shown in Table 4 have been produced since the IUFRO World Congress in Tampere in 1995. An annual newsletter giving notice about the activities of the group, meetings, changes in structure and information about new publications has always been included.

Research topics

Until the 1970s forest history was interpreted above all as an empirical science, at least in Central Europe. Only the guidelines published by IUFRO's forest history group in 1973, mentioned before, considered the relevance of historical investigation and pointed out the long term consequences of forest events.[4] Thus forest history was regarded particularly as an auxiliary discipline for the better understanding of the current state of a specific forest and as a support for forest planning.

The approach of forest history to forest policy, as it was expressed in many German-speaking universities, was the logical outcome of this viewpoint. Forest history was defined by the IUFRO Subject group as the investigation of human activity in the forest and the intellectual concern with the forest.[5] Although at the beginning of the 1970s non-forestry activities, such as the agricultural use of the forest became the subject of forest historical investigations, the emphasis of interest nevertheless was closely combined with forestry in the narrower sense of wood production, harvesting, forest policy, management and planning. The guidelines only dealt with the regional history of forest stands, districts and enterprises. The central interest was activity in the forest and its effects on the shape of the landscape. The viewpoint of the individual authors frequently focussed on the composition of the forest and its institutions, while social structures and processes were regarded as of little importance. It was not considered that the social demands on the forest exceeded the interests of forestry to any great extent. At the beginning of the 1980s Schuler called for a thematic and methodical extension of forest history and, in unison with Hasel, for the wider approach taken in general history to be adopted.[6]

Rachel Carson's *Silent Spring*, published in 1962, and the Brundtland Report, *Our Common Future*, published in 1987, were two of the signals which marked a critical analytical pattern of thinking which changed stereotyped thought patterns, put growth politics into question, and promoted

sustainability and sustainable development. This affected the work of the scientific community and influenced the conduct of forest history. IUFRO in its entirety started to orientate its scientific work increasingly according to the problems the forests of the world were confronted with, for example the uncontrolled forest destruction in the tropics, the transformation of natural and primeval forests into plantations, and the reduction of forest biodiversity, among other things. These problems can be traced back to the inconsistencies of the different needs and demands of society on the forest.

Sustainability and sustainable development can not be discussed without glancing back and analysing the historical background to the present status. The forest history group discussed the history of sustained yield at its meeting in Portland in 1983, and it discussed sustainable use, management and legislation at the IUFRO Centennial Conference in Berlin in 1992. These meetings showed that the reason why the claim for sustainability in forest management was originally postulated in all countries of the world was the legitimate fear of timber shortages and the need to secure the sustainability of timber production.[7] The papers showed that over recent decades there is a worldwide social claim for lasting woodland security to provide the extra-economic, welfare and social functions of forests in the public interest.

Little by little, these social claims gave rise to new fields of forest history research. On one hand, international investigations have increased, promoted by the long-lasting pressure on tropical forests caused by the overseas timber trade. On the other hand, the environmental history approach has been emphasised. Above all, recent forest history has been stimulated by historians who have not been educated in forestry or forest science. These new methods and approaches have been encouraged by the international conference in Florence in 1998[8] and by Schuler.[9]

Tropical forest history

The necessity of a global viewpoint about historical and present changes to the forest environment initiated the creation of the Tropical Forest History working party in 1981. Deforestation, resource depletion, the loss of biodiversity and the inability to sustain traditional inhabitants in the world's forests are posing some of the most urgent challenges yet faced by governments and international bodies. Critical and analytical historical studies are able to provide one perspective on these challenges by revealing complexities in the pressure and processes of change involved. To build such understanding requires that many individual studies be compared, contrasted, coordinated, disseminated and discussed. The Working Party arranged two

conferences on 'Changing Tropical Forests', the first in 1988 on the forests in Asia, Australasia and Oceania and the second in 1991 on those in Central and South America.[10] Discussion at these conferences noted that long-distance trade has exerted international pressure on tropical forests for many centuries. It also noted that the tropical forests in the Pacific Basin have become increasingly interlinked with temperate forests as the forest economy and trade of the region has developed. Accordingly, the Tropical Forest History Group convened a symposium to discuss these linkages as part of the Pacific Science Association's Congress in 1991.[11]

The global discussion on the causes of deforestation in the tropics led to further interest in the history of the forests in today's developed countries. What were the reasons for deforestation and subsequent reforestation? Can knowledge be derived from these experiences? IUFRO's XXII World Congress in 2000 gave rise to partnerships between institutions and researchers of developing and developed countries, and it promoted global co-operation in forest history research and related sciences. The theme of the Congress, 'Forests and Society: the Role of Research', encouraged the forest history group to focus on social changes and forests in countries of the South. Great attention was paid to the interaction between changes in environment and society and to the participatory forest management processes both as a strategy for forest conservation and development, and as the relationship between forest and public. An important task was the exchange of historical and present experience between mountain regions of the South and the North.

The discussion continued in the International Seminar on the Forest History of the Mountain Regions of the World, organised by the Working Party on Tropical Forest History in Naini Tal, Himalaya, India in 2001. The focus of the seminar was on the forest history of mountains, where ten per cent of the world's population depends on their resources. Mountain environments are considered to be essential to the survival of the global ecosystem. However, they are changing rapidly and are highly vulnerable to the human and natural ecological imbalance. As they are susceptible to accelerated soil erosion, land slides and rapid loss of habitat and genetic diversity, their proper management deserves immediate action. The objective of the Seminar was to compile the forest history of the mountains of the world which will be vital for launching programmes that contribute to their sustainable development. This new dimension to forest history is considered to help in understanding and analyzing the onslaughts of environmental degradation and problems of deforestation which have not occurred overnight. Lessons can be taken from the past systems of forest management to

add to the recuperating capacity of the existing forests. They can help ensure the regeneration of natural resources so as to be capable of meeting the requirements of humanity in perpetuity and also enlarge the horizon beyond trees to the people who must exploit them.

Approaches to environmental history

Because forests have always been a central resource to society, their history is readily integrated into general environmental history. The forest example enables the historical relationship between environment and society to be illustrated in a diverse manner. For example, Stuber considers the forest as a field of social conflict as well as a place of confrontation between different mentalities and cultures.[12] An increasing integration of forest history into the extended context of environmental history, as demanded by Schuler, has already come into being in the IUFRO Forest History research unit in recent years. Since this is a slow and non-spectacular process, occurring on the international level, it is most obvious in several universities. One has to take into account that when the group was founded in 1961, forest historians were exclusively affiliated with the forest sciences. However, for over two decades most members of the forest history group have been affiliated to other disciplines. The contributions to the IUFRO State of Knowledge Reports, mentioned earlier, are the best examples of this. One of their most important findings is that the forest is not just a background against which human history developed, but is an actor in this history, playing an active role in all the many different ecological environments. The debate on the relationships between society and forest resources is one of the crucial issues of our times. Hopefully, historical research will be able to make a substantial contribution in clarifying these relationships and defining strategies for environmental policies at the beginning of the new millennium.[13]

The Forest History group's main task is to encourage interdisciplinary teamwork within and outside of IUFRO, and to strengthen this integration. Aiming at this goal, the Research Unit took part in the first joint congress of the American Society for Environmental History and the Forest History Society USA in March 2001 by organising a special panel-session and also by participating in the first congress of the European Environmental History Society in St. Andrews in 2001. These were the first steps of the Research Unit Forest History in becoming closer to environmental history. The group will also change its name from Forest History to Forest and Landscape History.

Conclusion

The backwards glance at the historical interrelation between forestry and civilisation in northern countries shows corresponding characteristics with today's interrelation in developing countries. The development of careful management methods will only be possible if people understand that in the long run forest utilisation of natural ecosystems has to take account of the sustainable protection of biological processes. Historians are able to make important contributions to the urgent problems of development and environment in investigating the historical patterns of sustainable development.

The field of forest and environmental history has a responsibility to bring historical analysis to bear on environmental-social issues facing the world at the dawn of the new millennium. The methods have to be discussed as to how environmental history is able to influence public policy, resource management, pollution control, local and international development, social conflict, and the understanding of environmental problems.

Unfortunately, up till now there has been only a limited awareness of forest history research, among both the general public and the scientific community. It has led to a lack of knowledge of forest ecosystem dynamics and to a reduced capability of understanding the effects of today's political decisions and economic trends on forest environments.

Notes

1 Schmutzenhofer, H. 1996. *IUFRO's Aktivitäten im Zeitraum 1936 – 1996 und Pläne für die Zukunft.* Unpublished manuscript, Vienna: IUFRO General Office.

2 http://iufro.boku.ac.at/iufro/

3 Agnoletti, M. and Anderson, S. (eds) 2000: Forest history: international studies on socio-economic and forest ecosystem change and Forest history: methods and approaches in forest history. Wallingford: CABI Publishing in association with IUFRO (IUFRO Research Series nos. 2 and 3). Contain papers selected from a conference held in Florence in 1998.

4 IUFRO Subject Group S 6.07 (ehemals Sektion 07 Forstgeschichte) Unterausschuss Revier-und Bestandesgeschichte (Hg.) 1973. *Leitfaden für die Bearbeitung von Regionalwaldgeschichten, Reviergeschichten und Bestandesgeschichten*: Zürich.

5 *ibid.*

6 Schuler, A. 1981. Forstgeschichte in forstlicher Planung und Tätigkeit. *Schweiz. Z. Forstwes.* 132: 246; Hasel, K. 1985. Forstgeschichte. *Ein Grundriß für Studium und Praxis.* Hamburg und Berlin, 12.

7 Schmutzenhofer, *op.cit.*

8 Agnolotti and Anderson, *Methods and approaches in forest history, op. cit.*

9 Bürgi, M., Hürlimann, K., and Schuler, A. 2001. Wald- und Forstgeschichte in der Schweiz. In: *Schweiz. Z.. Forstwes.,* 12/01, 152. Jg., 476-480.

9 Bürgi, M., Hürlimann, K., and Schuler, A. 2001. Wald-und Forstgeschichte in der Schweiz. In: *Schweiz. Z.. Forstwes.,* 12/01, 152. Jg., 476-480.

10 Dargavel, J., Dixon, K. and Semple, N. (eds) 1988. *Changing tropical forests: historical perspectives on today's challenges in Asia, Australasia and Oceania.* Canberra: Centre for Resource and Environmental Studies, Australian National University; Steen, H.K. and Tucker, R.P. 1992. *Changing tropical forests: historical perspectives on today's challenges in Central and South America.* Durham, NC: Forest History Society.

11 Dargavel, J. and Tucker, R. 1992. *Changing Pacific Forests. Historical Perspectives on the Forest Economy of the Pacific Basin.* Durham, NC: Forest History Society.

12 Stuber, M. 1997. Wir halten eine fette Mahlzeit, denn mit dem Ei verzehren wir die Henne. Konzepte nachhaltiger Waldnutzung im Kanton Bern 1750-1820. *Beiheft zur Schweiz. Z. Forstw.* 82.

13 Agnoletti and Anderson, *Forest history, op.cit.*

3

Themes in European woodland history

Jan Oosthoek

Introduction

Until recently forest history has remained somewhat at the fringes of academic interest and research. However, there were two groups that had an interest in the past of Europe's forests and woodlands: historians and foresters. In general we can say that historians and historical geographers have tended to view the forests rather heroically as wastelands that were available for cultivation. The disappearance or re-advance of forests has been used as a measure for population fluctuations and the related increase or decrease of agricultural production (van der Woud 1987). In general this was a history of the clearance of the woodland, rather than the woodland itself. It was the triumph of human reason over nature and this is where historians connect to that second group with a professional interest in forest history: foresters.

Several books have been written by professional foresters who consider the technical and scientific developments that led to the emergence of modern scientifically based commercial forestry. In his magnum opus, *A History of Scottish Forestry*, Mark Anderson provides us with an overview of the development of forestry from pre-historic times through to the 20th century. In this history the use of forests in the past inevitably culminated in

modern forest plantations which are aimed at the maximum production of timber (Anderson 1967). In this light we must also consider the many texts that have appeared dealing with the development of modern forestry technology and the successful introduction of non-native species in Europe. In his book *The Scottish Forester*, John Davies tells us the story of efforts of seed collectors who introduced the conifer species that came to dominate European forestry and of the European foresters who devised methods and new techniques to grow these trees successfully. It is a heroic account of how foresters imposed their will on nature and conquered the bare Scottish hills (Davies 1979).

These histories are the product of the post-Enlightenment period in which forests became detached from the rest of the landscape. Woodlands were regarded as grey areas, unknown and potentially dangerous, from which humans carved a productive landscape. In this landscape modern forests are clearly defined blocks set aside for the sole purpose of timber production, seen as a separate category from the surrounding landscape and agricultural activities. They are part of the organised landscape that has come into being during the last two centuries. Before the enlightenment, forests were integrated in the wider landscape and not regarded as isolated wildernesses but part of that landscape used by people for social and economic purposes (Ciancio and Nocentini 1997). In fact the agricultural improvement since the enlightenment was a break with tradition and caused the neglect of the semi-natural European woodlands and the loss of past knowledge of how these forests were used and managed in a sustainable way. However, it was recently realised that this break with the past must be bridged in order to secure the future of the still existing European woodlands. Increasingly scholars and researchers from a variety of backgrounds are studying the interaction between humans and woodlands in broader perspective. They are interested in how people have made use of the different kinds of woodlands and how these uses relate to social and economic power structures. In addition researchers also want to know what the woodland ecosystems looked like before human intervention and how they changed and interacted with humans after they started to change the landscape actively. Within these two broad themes, which can be identified as the cultural and natural, a number of sub-themes and areas of research interest emerge.

Historical ecology

In their introduction to the edited volume *The ecological history of European forests*, Watkins and Kirby write that 'the rise of historical ecology has been

strongly linked to a burgeoning interest in the history of woodland' (Watkins and Kirby 1998, p. ix). We can easily reverse this statement and say that the interest in woodland history is the result of the rise of historical ecology. Woods are at the heart of historical ecology because they are relatively stable and long lasting, and survived many changes brought upon the landscape by humans (Rackham 1986, p. xiii). Therefore trees and woodlands are documenting landscape changes more effectively than almost any other ecosystem. Initially this research was almost purely focussed on the ecological history of native pinewoods, which culminated in 1959 in the publication of *The native pinewoods of Scotland* (1959) by Steven and Carlisle. That publication stimulated the interest in the past of the Scottish pine forests and was influential throughout the United Kingdom. Another pioneering study was conducted by Donald McVean of the Nature Conservancy at Beinn Eighe in the North of Scotland which revealed the impact of centuries of grazing on the age distribution of Scots pine and oakwoods (McVean 1953).

Although this research was ground-breaking it lacked an important element that is part of woodland history: the human dimension. For many researchers the publication of Oliver Rackham's *Trees and Woodland in the British landscape* (1976) was a key event in understanding the history of woodlands and linking historical documents with practical ecology. Several people followed Rackham and include the historical geographer, John Sheail and the ecologist, George Peterken. The work of these people on woodland history resulted in a growing historical awareness and imagination among ecologists. It was recognised that woods and trees are key components of the landscape which can provide readily recognisable historical evidence (Watkins and Kirby 1998, p. x).

Woodland pasture and management

In 1980 a count of so called ancient woodlands in north-west Essex showed that there were still 165 surviving woods, covering 1255 hectares. Most of these woods have been used as common wood pastures in to which animals were taken for grazing (Rackham 1986, pp. 94-95). The term wood pasture in itself seems contradictory because 'wood' and 'pasture' at first sight are almost mutually exclusive. It is still widely believed that animals eat the young shoots of regenerating trees and thus prevent the regrowth of woodlands. However all over Europe ancient woodlands are still with us and in many cases, such as in the Scottish Highlands, grazing pressure is even higher than ever before. This is raising some important questions: why did these forests not disappear? What did the woodlands look like before large

scale grazing was introduced? What role did management play in the preservation of the woods and which systems were used? In fact some of these questions should be rephrased, since grazing was not introduced. Dutch researcher Frans Vera has shown that for centuries, if not millennia, the European forests were grazed by large herbivores which created an open parkland like landscape. He rephrased the question of what the woodlands looked liked before the introduction of grazing, into the question of what artificially high grazing densities are doing to woodlands (Vera 2000).

In a ground-breaking study of the influence of grazing pressure in the North of Scotland, historian Robin Noble questioned the usual attribution of decay of the woods in that part of the world to sheep and deer. He concluded that the woods present in 1774 are still here and have even expanded during the past 40 years or so, even though more sheep were introduced. He concluded that there is no simple answer to the question of what causes the survival or loss of ancient woodlands in Europe (Noble 1997).

However, many writers suggest that there is a complex interaction between humans, and their grazing practices, and the natural woodlands. Many factors such as local climate, soil and available plant communities play a role in the survival of woodlands. We need to know more about these interactions since foresters and conservationists in many parts of Europe are struggling with the impact of increasing deer populations and falling numbers of sheep. There are lessons to be learned from the past because it is clear that woodlands can survive under grazing pressure and that people in the past had found ways to preserve them.

Woodland and power relationships

Throughout the centuries, aristocrats and other landowners have used woodlands to display their power over land. The large Scottish Highland estates are a living testimony of this and still today the rich and powerful, such as bankers from Switzerland, businessmen from Holland and oil sheikhs from the Middle East flock to the country to buy an estate. This tradition goes back a long time although the power relationships and management have changed over time. Traditionally, as is the case in Germany, forests were defined to impose order over large tracts of land. Strict control over border lands were a means of policing them and a means of expansion (Kiess 1998). Forests were also used for the display of power, which is most evident in the spectacle of hunting, and therefore the control

of hunting grounds were key elements in the maintenance of royal and aristocratic power.

However, control over forests was not a one-sided affair and the powerful had to organise access to woodlands by the local populations who needed them for their economic activities. This precarious balance between interests of the landowners and communal rights over land influenced the form of woodland management of estates. Recent research has shown that different landowners had different management philosophies and also that limiting access of the ordinary tenant could endanger the woodlands because they did not feel responsible for them (Watson 1997). This led in many cases to more restrictive legislation and severe conflicts. It was only the removal of conflicts during the 18th and 19th centuries that opened the door to the introduction of modern forestry such as *Schlagwaldwirtschaft*. It is argued that when landowners gained full control of their land it encouraged them to develop new forms of woodland management and the removal and sometimes silent extinction of common rights (Ernst 1998). In the United Kingdom this led to the establishment of probably the most independent government organisation that the country has ever seen: the Forestry Commission. That it could avoid severe criticism of their management style and techniques was possible because of its independence and led to a public backlash against forestry during the 1980s. This demonstrates that forestry programmes are still closely linked to power relationships and to understand these properly we must learn more about the historical context in which they developed.

Social context

One of the most influential books that discusses the relationship between society and woodlands is undoubtedly Keith Thomas's work *Man and the natural world* (1984) in which he traces the changing attitude to trees and woodland in England. However, this book was not the start of the study of the cultural aspects in woodland and only a small part of it is devoted to trees. More recently monographs have been published including Schama's *Lanscape and memory* (1995) examining the wood culture in the western world and Stephen Daniels' book on the iconography of trees since the 18th century (1993). This is an important area of research, which is often linked to questions of national identity and religion. Radkau, for example, has examined 19th century nature worship in Germany and how this can be linked with the development of forestry during the 19th century in that country (Radkau 1997).

In her ground-breaking study *A critical geography of Britain's state forests*, Judith Tsouvalis (2000) shows how different social contexts are giving rise to different perceptions of what woodlands and forests are and what they should look like. She focuses on the recent re-invention of the concept of 'ancient woodlands' in Britain and argues that foresters could not recognise this category because it is outside their reference framework. Foresters systematically excluded the category ancient woodland because it did not fit with what they perceived as the 'real world', i.e. conifer plantations. Mental constructions have thus a bearing upon forestry management practice and have a direct visible impact on the landscape and appearance of the forests. This is also true for historical and mythological perceptions of forests and trees that often influence or even dictate forestry policy.

Myth and reality

In the first chapter of the book *Scottish woodland history* Smout writes, 'many people have a set of ideas which guide their overall view of how the landscape has changed over the last two millennia' (Smout 1997, p. 5). These ideas can be described as perceptions of the past and are not necessarily correct. Trees are especially vulnerable to false impressions or even myths because they are a prominent part of the landscape and an important element of people's daily experience. Landscape changes through natural causes and human action but most of these changes are relatively slow. However, the sudden felling of trees is a radical change and therefore always noticed by people living near to them. This is probably the reason that the removal of trees was so frequently recorded in earlier times, especially during the Middle Ages and after. But the gradual regeneration and growth of neglected woodland is hardly noticed because it is too slow to be noticed. The long time spans that are involved with the development of forests can lead to distorted perceptions of the area covered with woodlands and trees and how people managed and used these (Rackham 1993, pp. 23-25). However, it is on these wrong and distorted perceptions that many conservation and environmental policies are based.

Stories of forest destruction are almost as old as human civilisation itself. The oldest recorded story, the Gilgamesh Epos, tells the tale of the destruction of natural forests of the ancient Middle East for the construction of cities, temples and palaces. And in our own times, who has not heard of the destruction of the rain forests of South America and Asia? In Europe there also exists a powerful story of forest destruction: that of the disappearance of the Great Caledonian Forest in the north of Britain. Foresters and

conservationists alike used the story of the Caledonian Forest to justify their actions. The British Forestry Commission justified the planting of Sitka spruce as an attempt to restore the Caledonian Forest after a long period of degradation and decline. The critics of the Forestry Commission, on the other hand, decided that the Caledonian forest could never be revived with the regimented ranks of alien conifers. The only way to bring back the old forest was with the original native trees that had once grown there: Scots pine, oak and birch. In the early 1990s the Millennium Forest Trust for Scotland obtained several millions of pounds for restoring native woodlands. According to Smout this was due 'in no small way to the grip on the public imagination of the Wood of Caledon' (Smout 2000, p. 41). Unfortunately for both the Forestry Commission and the Millennium Forest Trust, Smout and Breeze shred the story of Caledon to pieces. Both authors effectively show that it is a myth, a product of the Romantic period that was popularised during the latter part of the 20th century (Breeze 1992; Smout 2000).

Myths can have their value when it comes to the protection of valuable woodlands, but can also lead to conflict where co-operation is needed. It is the task of woodland historians to defuse myths and show what really happened in the past in order to make sure that management decisions are not based on emotions but on what happened in the real world of the forests.

Rise of modern forestry

An important theme in forest history is the rise of scientific forestry from the 18th century onwards. The development of modern forestry can be associated with the emergence of the professional forester and formal forestry education. It was the rise of modern forestry in the wake of the rationalism of the enlightenment that obscured the traditional woodland management practices that were in use for centuries. It is for this reason often difficult to uncover the nature of traditional practices such as coppicing, pollarding and woodland grazing. Watkins argues that this is because these practices were so prevalent and common that authors felt they did not need to comment on them (Watkins 1998, p. 6). When described by contemporary observers they tended to brand these practices as old-fashioned or even damaging and un-economic. Also during the past few decades this argument has often been used to defend the introduction of new forestry techniques and management practice associated with commercial forestry and the introduction of monocultures. Over time the

traditional modes of management were overshadowed by modern forestry practice.

The decline of traditional woodland management was hardly noticed until recently, but the rise of modern forestry is well documented and described. Foresters have been very active in documenting and analysing the rise of their own profession, initially not in defence of what they did but to provide themselves with tradition that was connected with the old tradition of forest management. However this is pseudo-history and it is clear that there was a break with the earlier traditions. Nevertheless, the story of the rise of scientific forestry is told over and over again in forestry literature since the early decades of the 20th century, e.g. Schlich's influential *Manual of forestry* published in 3 editions between 1889 and 1925. It was identified that the roots of modern forestry were laid in Germany and, to a lesser extent in France and was copied throughout the world without many alterations. However, this is a simplification that can not be upheld in the light of recent research. Modern forestry began indeed in Germany and spread subsequently to other parts of Europe and the rest of the world. In many cases this was not a straightforward process, as in the case of Britain. By the mid-19th century when the forestry service in India was established, Germans employed by the British colonial authorities ran it. Soon it became clear that the traditional *Hochwald* forestry practice did not work in India and had to be adapted to the local conditions. At the same time new tree species were introduced in Scotland which added to the trees available in traditional estate forestry. In doing so Scottish foresters acquired unparalleled forestry knowledge in Britain that developed quite independently from the German tradition. This body of knowledge was amalgamated with the German-Indian forestry practice that was brought back by foresters who had served in India and other parts of the Empire. When the Forestry Commission started its work in 1919 it became clear that the upland areas available for forestry were well outside of existing experience and that forced British foresters to develop entire new forestry management strategies. These new forestry methods were based upon the experience gained in the Scottish and colonial context (Oosthoek 2001).

Different developments can be detected in other parts of Europe, for example in Spain. There the introduction of modern forestry practice was heavily influenced by German and American forestry science, especially the cultivation of semi-arid areas and the application of technical fixes, such as terracing and the use of heavy machinery. In fact the outcome of forestry management as used by the 1970s, was not that different in many parts of Europe: a technocratic approach aimed at the highest possible yield and

production, large scale afforestation, the creation of monoculture plantations and the use of heavy machinery (Garcia 1998).

Another key theme in European forest history has been the search and application of more productive tree species. These histories recount the heroic stories of the early plant collectors who introduced the new species in Europe, the planting trials that were conducted with them and the creation of special nurseries. Some observers have argued that the outcome of such experiments was the rise of tree monoculture, most of which consists of introduced species. Very often foresters are blamed for not having regard for the landscape and wider ecosystems in which these plantations were created. It is likely that this impression is reinforced by the historiography of the heroic efforts made by foresters to plant trees where hardly any trees had grown before. However, some research has already shown that modern forestry practice did not rise for its own sake or in the wake of the enlightenment. It was more than a century after the age of rationalism that the modern plantations started to appear in the landscape, because it was by then that wider society demanded the creation of these plantations and foresters responded (Oosthoek 2001; Sheail 2002).

Conclusion

The development of woodland history has been fruitful and exciting and has already made considerable impact on the management of the European forests. This is the result of the extraordinary variety and vibrancy of research into forest and woodland history carried out by all kinds of scholars and scientists ranging from foresters, historians and ecologists, to conservationists and many others. It has provided us with a picture of the relationship between humans and the forests before the introduction of modern forestry. We are rediscovering how societies in the past reconciled their demand for wood with the needs of the woodlands themselves and the creatures living in them. It took our ancestors generations to work this out and it is likely that it will take us some time also to rediscover what they knew. It is easy to say that the modern forester destroyed this knowledge by introducing rational management systems believing that nature could be managed as a factory. However, this is too simplistic, and studying the origins and development of modern forestry shows the rationale behind it, and how it was shaped by the social and economic pressures of the time.

In 1976 Oliver Rackham was quite pessimistic about the future of the more natural and ancient woodlands in Europe and particular in Britain. However, since the mid-1970s things have changed dramatically and the

protection of ancient and natural woodlands are now taken for granted. Ten years after his pessimistic note, Rackham acknowledged that he had been too pessimistic and at present the future for woodland conservation and restoration in Europe looks brighter than ever before. The same applies to the field of woodland history which has been instrumental in bringing about the changes in attitudes to woodland management and conservation. The efforts of the many scholars in this field have left us with a richer understanding of Europe's woodland heritage and its importance for human society and nature alike.

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4

Sources and silences in Australian forest history

John Dargavel

In 1969 W.E.H. Stanner castigated the failure of historians and public policy to acknowledge Aboriginal rights and culture by calling it 'The Great Australian Silence', a silence which the historians later broke.[1] Feminist and environmental historians broke other silences in the 1970s, and in the 1980s Eric Rolls and L.T. Carron broke the silence of forest history.[2] Silences can be revealed against claims of imagination and latent scope, or may be shown against trends in historiography, or may be seen pragmatically against measures of work achieved, time and place, or material limitations. This paper reviews what forest history has been written since Rolls' and Carron's pioneering works in order to suggest some silences that remain.

Australian forest history is found in a number of monographs, in many government reports associated with heritage studies, various theses and dissertations, and in edited collections, such as the proceedings of forest history conferences.[3] Six of these edited collections published between 1988 and 2002, including this volume, are examined for the purpose of this paper.[4] They contain 145 papers of which 127 are about Australia. The Australian papers are categorised by scale, forest type, tenure, time, theme and historiography, according to what is taken to be their main thrust. Some categories were not relevant to some papers. It needs to be born in mind

that this process over-simplifies the complexity and nuances of many of the papers.

Table 1: Comparison of forest areas officially reported[5]

	1992 report	1997 report
Total area (million ha)	43.1	155.8
Forest type (%)		
Eucalypt forest	59.3	18.3
Mixed woodland	32.7	25.4
Woodland		54.0
Rainforest	5.9	2.3
Mangrove and swamp forest	2.1	
Total	100.0	100.0
Tenure (%)		
State Forest	26.5	8.6
Conservation Reserves	22.7	11.3
Crown Land	24.5	10.0
Private Forest	26.3	
Private and lease		69.4
Unresolved		0.7
Total	100.0	100.0

The categories of forest type and tenure have changed not only with settlement, alienation, and the reservation of state forests and national parks, but also in how we define them. For much of the nineteenth and twentieth centuries, forest was thought of as having a more or less closed canopy of medium to tall trees containing a resource of timber among other things. The best official estimate, reported in 1992, was that there were 43.1 million hectares of forest which included 14.1 million hectares of 'mixed woodland'. By 1997 the international influence of the Montreal Process to report on the temporal and boreal forests of the world caused the extensive areas of Australian woodlands with open canopies, shorter trees and limited or no timber resources to be included. It added 112.7 million hectares to the total, mostly on leasehold or private property. Although the data are not exactly comparable, due to differences between the collection methods, the magnitude of the proportionate changes can be seen from Table 1. The Australian Forest History Society takes 'historical understanding of human interactions with Australian forest and woodland environments' as its objective which was formulated in 1988 and formalised in its 1998 constitution.[6] It has not

attempted to compare its objective with the changing official classifications of forest types.

Scale

The scale of interest adopted by the papers is shown in Table 2. The regional scale describes forest type regions as well as geographic or political ones. The local scale includes two papers focussing on local history located across Australia. The Australian scale includes nine biogeographic papers whose time scale is deep into the past.

Table 2: Scale

Scale	Number of papers
Regional	46
Local	34
Australian	24
State	23
Total	127

The location of the forests considered is shown in Table 3. Apart from the papers which refer to Australia—the Continent as a whole—the majority of the papers concern forests in Victoria, New South Wales and Queensland. No papers deal exclusively with South Australia, although one deals with it in a comparative study with Victoria.

Table 3: Location by State or Territory

State or Territory	Number of papers
Australia	28
New South Wales	27
Victoria	24
Queensland	16
Tasmania	15
Two or three States or Territories	6
Western Australia	6
Australian Capital Territory	3
Northern Territory	2
Total	127

Tenure

The tenure considered by the papers is shown in Table 4. Tenure was irrelevant to slightly over one-quarter of the papers. The rest were overwhelmingly concerned with public land, primarily with state forest. The state forest category includes timber reserves and the national park category includes nature and similar conservation reserves outside state forests.

Table 4: Tenure

Tenure	Number of papers
State forest	42
All or not specific	20
State forest and national park	16
Private property and lease	5
National park	6
Crown land	4
Municipal and school	2
State forest and private property	1
Total	96

Forest type

Table 5: Forest type

Forest type	Number of papers
All, not specific	30
Callitris	24
Eucalypt	22
Eucalypt and rainforest	10
Plantation	7
Rainforest	5
Ash	6
Jarrah, karri	5
Urban forest	3
Acacia, bunya, casuarina, red gum, yellow box	(1 each) 5
Total	117

The types of forest were not specific or were irrelevant to about one-third of the papers, while many papers referred to generalised native eucalypt forest or to eucalypt/rainforest combinations (Table 5). The prevalence of papers

dealing with Callitris forests is due to the inclusion of the collection of papers arising from the Perfumed Pineries conference in the analysis. No papers dealing with Callitris appeared in the other volumes examined. Apart from the Callitris papers, only one paper dealt with woodland.

Main period

Period was irrelevant to three of the papers, three dealt primarily with the period before the human occupation of Australia and seven dealt with the period before European settlement of which two extended into the twentieth century. Many of the remaining 114 papers mentioned antecedents to the main period they considered (Table 6). Papers dealing with methods dealt with only one or a few years in the most recent period. The length of period covered in the remainder of the papers was fairly evenly distributed over the range up to 200 years.

Table 6: Main period covered in the post-settlement era

Start period	End period				Total
	1788-1849	1850-1899	1900-1949	1950-2002	
1600-1788				1	1
1788-1849	2	4	2	15	23
1850-1899		4	5	16	25
1900-1949			9	33	42
1950-2000				23	23
Total	2	8	16	88	114

Theme

The main theme or focus of each paper was classified, as were any of apparently equal standing. This process considerably over-simplified the complex discussions in many of the papers and did not classify interconnections between multiple themes. The 154 themes noted are collated in Table 7.

Table 7: Focus of papers

Focus	Including	Themes
Science	Age, biogeography, botany, climate, dendrochronology, evolution, historical ecology, litter, palynolgy, phytoliths, soil, stumps, wood anatomy	26
Heritage	Archeology, places, buildings, landscape, surveying	24
Industry	Industrial archeology, labour, logging, sawmill firms, transport, wattle bark, woodchips	19
Environment	Conservation, fauna (arboreal marsupials, bats, koalas), rabbits, weeds	17
Forestry	Age, nurseries, planning, silviculture, species trials	16
Historiography	Oral history, sources, surveys	13
Fire	Environmental change	12
Social history	Convicts, houses, local history, logging town, memorial, sawmilling settlements, schools	12
Aboriginal	Traditional use, heritage	10
Politics/policy	Community action, disputes, federal-state relations	9
Values	Perceptions	9
Biography		8
Land use	Clearing, grazing, tourism	7
Total		182

Historiography

The classification of the underlying approach and philosophy with which the papers reviewed here are written—their historiography—has to recognise both changing perceptions of what is important in forest history and the range of disciplines engaged. Widening perceptions called for more disciplines to be engaged in forest history, as in managing the forests themselves.

Stephen Legg's prescient paper in 1988 drew our attention to the proliferation, pluralization and polarization in the 'fledgling forest history' of the time.[7] The proliferation and pluralization he glimpsed has eventuated, as this paper has shown, and pluralization may gain an even stronger hold if the post-modernist philosophies he discussed in a later paper are widely accepted.[8] In pointing to polarization, he emphasised the social construction and intent of writing history and he contrasted what he called an 'orthodox' perception of forest management with the 'environmental challenge' to it. Implicit in the environmental challenge was breaking the silence of orthodox

forest history to environmental values. Legg's contrast between orthodox and challenging perceptions of forest history was taken up by Williams in 2000.[9] Williams stresses the power of dominant discourses and follows Ciancio and Nocentini who argue that the traditional scientific paradigm of forestry should be replaced by a 'new' paradigm of synthesis, holism and a non-linear conception of change.[10]

Although Legg's dichotomy of orthodoxy-challenge mirrored the polarization of the forest use debate during the 1970s and 1980s, public policy has moved on. Notably, heritage and environmental values are now routinely assessed and incorporated into planning practice. Environmental challenges to decisions continue, but many topics which were challenging have become orthodox. Some of the papers reviewed here can be placed in Legg's categories, while others can be placed more readily under some of the main disciplines within which they have been written. Differences within disciplines have been ignored as most papers are written within the dominant paradigms of the authors' fields. Again, over-simplification is inherent in the process which obscures the multi-disciplinary nature of many papers. Nevertheless, the categorisation in Table 8 does display the breadth of approaches brought to forest history.

Table 8: Historiography

Historiography	Number of papers
Legg categories	
Environmental challenge	10
Orthodox	11
Disciplinary categories	
Science	23
Historiography	19
Social history	10
Heritage studies	10
History of science	9
Industrial history	9
Cultural history	8
Biography	6
Aboriginal studies	5
Policy studies	4
Historical geography	3
Total	127

Silences

Silences can be revealed against claims of imagination and latent scope, as well as prosaically against progress, as was noted at the start of this paper. Environmental history—of which forest history can be taken as a part—is imbued with claims, more purposefully perhaps than other histories. Much as it may tell a good tale, it presses to provide the context for present problems; it seeks to be relevant.[11] The incorporation of heritage studies into geographic information systems supporting the Regional Forest Agreement process provides a clear example. But canvassing just what the present problems are, which press most, which are silent in historical studies and what constitutes relevance are personal judgements. They may also be politically powerful, as in Stanner's case, in changing the dominant discourse. By comparing what has been achieved against the potential scope in time and extent, noted at the start of this paper, I have nominated four as: indigenous use and meaning, public forests other than state forests, private and leasehold forests, and plantations.

'The Great Australian Silence' in forest history

The profound silence which Stanner criticised has been slightly diminished in forest history by the papers which have looked at traditional uses of the forest, the effects of Aboriginal fire regimes and the surveys of Indigenous heritage sites. These topics have been considered in particular regions and clearly warrant extension to others. But they have not addressed dispossession and cultural loss, which lay at the heart of Stanner's critique. What might forest history do?

A symbolic cultural step might recover and restore the names of the trees. Jarrah, karri, bunya and a few more have their original names, but most were given European names—ash, cedar, oak, pine, for example. Such a step would complement the recovery and restoration of place names.

The current debate about the extending frontier of agricultural settlement has brought out not only the violence involved but also the changing processes of accommodation between the two societies. These seem potentially fruitful themes to explore in relation to the expanding boundaries of state forests and national parks. What part did their reservation play in dispossession? How did the timber industry, forest or parks services and Aboriginal people interact? We might note the recent scientific research to recover the history of Aboriginal fire regimes in order to restore the biodiversity of Tasmania's South-West World Heritage area and the insights it

provides for cultural restoration. We might extend our interest to examine the recent history of co-management of National Parks.

Public forest beyond the pale of state forests

The history of state forests, state forest services and forestry has dominated Australian forest history, yet state forests occupy only one-twelfth of the land area of forests and woodlands (Table 1). The history of forested national parks or conservation reserves, and of parks and wildlife services has received little attention in the papers reviewed here. There are overlapping areas here as many parks extend far beyond the forest.

'The Wood of Neglect'

I have previously depicted the forests and woodlands on private and leasehold lands as being the 'Wood of Neglect'; largely neglected by public policy, neglected by their owners, neglected by forest historians.[12] There are of course exceptions, some increased awareness, even recent tree farming and landcare programmes in many regions. But these well-meaning programmes might gain insights about the present condition of remnant woodlands by breaking the historical silence about their use and management. We might also explore the century or more of programmes to encourage tree planting and reflect on their rhetoric and reality.

Plantations

Surprisingly little attention has been paid to plantations, given their historical importance in Australian forestry, the pace of their current extension and the intensity of the management practices that have been developed. The new 'silvi-business' of genetic improvement, high chemical and energy inputs, and international investment and control is a far cry from classical forestry. Yet it emerged from a century or more of state and company endeavours. We might well compare and contrast our Australian history with similar developments of industrial resources in Brazil, Chile and New Zealand for example.

There is much for Australian forest historians to do.

Notes

1 W.E.H. Stanner 1969. *After the Dreaming: black and white Australians—an anthropologists view.* Sydney: Australian Broadcasting Commission (Boyer lectures).

2 Eric Rolls 1981. *A million wild acres.* Melbourne: Thomas Nelson; L.T. Carron 1985. *A history of Australian forestry.* Australian National University Press.

3 Monographs include those published by the Light Railways Research Society of Australia. Government reports include those produced in the Comprehensive Regional Assessment process.

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5

Localism in Victorian forest conservation before 1900

Stephen M. Legg

Despite the maturation of forest history research in Australasia in recent years, fostered in no small part by the Australian Forest History Society, the early period of the development of forestry remains something of a *terra incognita*. For a long time, Carver's (c. 1960) manuscript 'Forestry in Victoria, 1838-1919' remained the most detailed outline of legislation, reports and personnel in any of the States, but it offered no interpretation or context and has been relatively little known, while Rule's (1967) *Forests of Australia* was typical of the early general surveys. Fortunately, a detailed literature written from a variety of fruitful perspectives has emerged for both the federal and state levels (e.g. Carron 1980 and 1985, Roche 1987 and 1990, Moulds 1991, Dargavel 1995), along with numerous academic theses and their popular derivatives which tend to focus on developments in the different States (see surveys by Legg 1988, 1995). There are systematic guides to the legislation, regulation and administrative practices in forestry (e.g. Carver c.1960, Dargavel et al. 1986a,b; 1987a,b,c,d), and a proliferation of local and thematic studies occurred in the 1980s and 1990s. A useful survey of forests in Australian local and regional history was undertaken by Kesby and Frawley (1989). Taken collectively then, there has been a massive advance as we have moved into, and beyond, the authoritative survey. When we

compare our state of research with that in most countries outside North America, our rapid progress is quite impressive.

But the coverage remains problematic. This has been due as much to necessity as predilection as, until only a few years ago, even the broad sweep of forest management policies and practices remained little known, and published works were relatively scarce. Recent environmental histories (Dovers 2000, Bonyhady 2000, Griffiths and Robin 1997, Griffiths 2001) have added an important new dimension, and there is hope that in the not too far distant future there will be a comprehensive awareness of the human impact on forests as historical works become systematically integrated with scientific reconstructions of the historical period, as well as better coordinated with palaeo-environmental records. The pioneering works on environmental management in Australia by Powell (e.g. 1976, 1988, 1995), and Grove's (1995) innovative analysis of the origins of western environmentalism, offer valuable contexts within which to position forestry, with Dargavel's 1982 thesis offering yet another, more radical, perspective. Even an engagement with post-modernism may yet be possible (Legg 2000, Williams 2000). But, regardless of all these developments, the map of our forest history remains far from complete. The occasion of our Society's fifth national conference offered a great opportunity for us to re-think some of our methods and sources.

In this paper, I briefly examine some of the methodological constraints on our forest history research, and discuss the findings from a preliminary survey of localism in Victorian forestry, 1855-1900. There are five broad limitations obscuring our view of the early origins of Australian forestry: centralisation (resulting in a predominantly official discourse and a concern for 'top-down' decision-making processes), urban bias (resulting in a comparative paucity of knowledge of provincial affairs and interactions), teleology (resulting in a disproportionate ignorance of forest management before the establishment of the modern forest services), an incomplete understanding of the political process (especially in regard to inputs, rather than outputs), and an apparent lack of appropriate sources and methods for the task. Progress in the literature is always an incremental process moving through discrete phases of discovery, exploration and critique of new sources and methods, which in most cases are eventually added to, rather than substituted for, the old. The initial enthusiasm with single sources or new approaches is generally tempered by the collective progress from the diversification and integration of methods. And with each advance there remains the task of 'infilling' to apply case studies more widely, and to check the veracity of generalisations.

Limitations

Centralisation

Reconstructions from the historical record have been biased toward an official discourse dominated by government records (parliamentary debates, papers and gazettes); tempered by an orthodox, institutionalised recollection from within the forestry profession; shaped by a variety of conventional wisdoms about issues as diverse as the origins of the conservation movement and its relation to forestry; and doubtless subject to a variety of class, cultural and other perspectives. This comes as much from methodological constraints as any diversity in philosophical stance (the latter is discussed in Legg 1988 and 2000). After all, the material supporting the official discourse is readily accessible, voluminous, authoritative, apparently reliable, and often meticulously indexed—it is generally the first place the researcher looks, although the monolithic character, sheer volume, and the dry nature of the material is often daunting. This is not to discount the significance of the official discourse as critical to the early development of forest history research in Australasia—the incredible detail of the parliamentary debates, papers and gazettes represent, in terms of breadth, depth and length, an unprecedented and in many cases, still largely untapped, historical resource. Indeed, some of the difficulty will be in finding a suitable alternative, or at least a complementary, data source. But, by definition, the official discourse comes relatively late on the scene, and often misses the early history of forestry precisely because it wasn't well controlled by the state. Oral history offers something of an alternative to this official discourse, so community, industry, professional associations, and indigenous land uses are all aspects of human interaction with forests receiving greater attention (e.g. Kerr 1995, Borschmann 1999, Kerr and McDermott 2000, Higgins 2000, MacFie 2000). Borschmann's (1999) *The People's Forest* suggests another aspect of centralisation, that the enormous range of experiences, attitudes and approaches to forests that exist at any one time is obscured by the strikingly singular official discourse. But although oral history is suited to a variety of applications, a lack of continuity in collective memory means that, again, there is limited potential for reconstructions of very early periods.

The nature of the historical record has strongly supported a focus on 'top-down' factors, such as the influence of capital, political leaders, influential bureaucrats and 'expert' scientific or managerial opinion. More recently, the influence of an intellectual and aesthetic elite has also been examined (see Ritchie 1989, Frawley 1994, Lennon 2000, Bonyhady 2000). By contrast, the 'bottom-up' or 'middle ground' factors at the base of the political

process have received relatively little attention (for terminology see Carr 2000). In Powell's (1970) terms, we might say the 'popular discourse' has been discounted because of the apparent significance and ease of access of the 'official discourse'. And yet what seems critical is the interaction of the two: the particular place in space and point in time. We have long been aware from brief encounters in the historical record that popular political activity affected parliament (e.g. through petitions); we know that broadly industrial and specifically corporate interests shaped the management of timber supplies by the state; we appreciate the existence of a vibrant trade in forest products; we have encountered various interest groups like the merchants, unions, managers, owners and local governments; we have found common folk living and working in what were previously thought to be uninhabited forests; we have been acutely aware of regional variation in the demand and supply of forest products, we have seen that local forest management boards were ineffective precursors of more modern centralised bureaucracies; and we have registered the development of colonial policies designed to devolve responsibility for forest regeneration by promoting private forestry amongst landowners. We need to turn these often merest glimpses, into substantial areas of research in their own right, to disentangle them from the domination of other, competing narratives, and search for productive research methods and sources.

Urban bias

Given the powerful impress of central authority in the forest history literature, the resultant historical interpretations have suffered a subtle urban-bias, for forest administration was predominantly metropolitan-based. More particularly, the legislative and executive functions of forestry (from which most of the historical record is derived, and the resultant discourse constructed) were urban and metropolitan, while the provincial centres, rural areas and the forests beyond were where much of the basic interaction and impact occurred. In these latter districts, the demand for, and supply of, timber was enacted; policies and practices were applied and feedback gained (largely by trial and error); and much of the political groundswell for and against the conservation of forests gained momentum. We must also extend this analysis beyond the colonial metropolis to the imperial metropole, for so much of the very early control of Australia's forests in the older colonies of New South Wales and Van Diemen's Land was linked to London. The power of British capital throughout all of the nineteenth century is fundamental to an understanding of much of timber production, either from the big timber mills, or indirectly through the huge mining companies so critical

to the demand for wood fuel and pit-props (Dargavel 1982). Even our fundamental notions of the development of forest conservation are themselves tremendously urban-biased, regardless of the fact that the international origins of the movement may yet undergo re-interpretation.

Teleology

There has also been a discernible teleology in the literature, with much of the period before the emergence of the independent forest services treated far too superficially, and generally only as a precursor to the main interest, which occurs later, in the narratives. This is true of both the literature on forestry specifically and forest conservation in general; both occasionally in danger of mythologising the past by focussing too much on the development of independent forest services, or the formation of a modern conservation movement, respectively (Callicott and Nelson 1998, Legg 2000). Time has been collapsed, as periods of up to a century have been presented in disproportionate brevity, or at least highly selectively from a few well-known documents and well-worn quotes. This might be justified by a focus on the lack of success of forest conservation; the developments, and particularly the successes, really were few and far between. But the history of our relationships with, use of, and impact upon the forests were just as rich and varied then as later on. And we know so little of the finer detail or the intricacies and complexities. For example, studies of modern forestry have incorporated sophisticated longitudinal analyses incorporating a wide range of sources and expressions of political influence on the policy process, but neither that depth nor breadth has so far been replicated for much earlier periods. Or, at least, the existing studies of colonial forestry have suffered a scale problem, with either too broad a sweep of time or too narrow a spatial or thematic focus. Comparative studies have helped, but there is a need to move toward greater coordination and integration of the basic elements.

The very nature of historical research and the typical time and resource limitations on our work compounds the teleological trend. We tend to head backwards through time, working from the familiar modern period back along narrow and selective pathways. We incrementally add to our knowledge by searching for leads among the historical backgrounds, contextualisations and justifications often given in each subsequently earlier 'landmark' document that we locate. For example, major editorials and the first reading of parliamentary bills routinely dealt with a brief history of developments (or, in the case of forestry, lack of them). The use of spatial metaphors, and the link to geographical studies of 'mental mapping' in the late twentieth century are surprisingly appropriate here. We rarely have the resources, or

the inclination, to start in the distant past and work our way forward to see what we might have missed; the process is generally too inefficient. A fundamental problem resulting from this selective raiding on the past is that the further we go back the more difficult it becomes to position each event, trend or development in its historical or geographical context, if only because of the lack of data. This subtly reinforces a natural tendency towards genetic, rather than generic, studies: it is easier to 'compare like with like' when there is a paucity of information about other ideas, movements or impacts at the time. Consequently, we might lose sight of the wider picture, whether it is the local, regional, national or international context.

Focus on outputs

Although there has been a natural tendency for the popular histories and early general surveys to focus on policy outputs, institutional outcomes, and environmental impacts, it would be grossly misleading to suggest that Australasian forest historians have ignored the nature of the political process. On the contrary, many of the orthodox histories of the forest services have traced various influences on the formation of these administrations. Further, the academic work dealing with the development of forestry policy, or the broader formation of the forest conservation movement, has almost invariably detailed the various forces that ultimately shaped the landscape. Although more common in North American forest histories, economic processes have also received attention, and the fundamental articulation between market forces and political processes has been explicitly acknowledged in most works and has formed the central core of many (see the 'Free Market' approach in Legg 1988, Jackson 2000). Perhaps, because of the success of these preliminary works, we are now at a stage where we can better appreciate the need for a proliferation of detailed, systematic, fine resolution studies. For example, we need to clarify the input of ideas, economic signals and political power at different times and in different places and be able to see the connections: what was the state of knowledge about forests and forestry, how was this information disseminated, what was the nature and significance of early political movements, what was the role of capital and price signals, what was the perceived role of forests in society, and what of the role of technological change? We need to deal with the persistent centrality, urban bias and teleology and yet not devolve our focus so far as to become merely antiquarian or provincial.

Sources and methods

Although often inherent, these methodological difficulties are far from insurmountable and are due as much to the relatively fledgling state of forest history research in Australia. We need to be mindful of the youth of non-indigenous forest use in the New World and contrast our experience with the much greater constraints facing forest historians in the Old World. The development of research into medieval European forest history is sobering in this respect, for the sheer antiquity of their subject matter; woods of between 200 and 500 years of age in many cases. Faced with what we might regard as a paucity of sources, there is tremendous ingenuity with which their reconstructions have been approached, although there are striking parallels with the new breed of environmental histories in the New World. Rackham's seminal (1980) *Ancient Woodland: its history, vegetation and uses in England* incorporates an impressive range of sources and techniques to reconstruct a detailed ecological, economic and social history: pollen analysis, written evidence, earthworks and surface features, vegetation (including dendro-chronology and interpretation of tree form), archaeological artefacts, iconography, practical experience and oral tradition (see also Jack 2000). Like Rackham, we need to be critical of the many shortcomings of each source and be aware of the need for integration and independent verification. We also need to remember the substantial historical variation within Australasia, New South Wales and Van Diemen's Land having post-indigenous forest histories at least half a century longer than the other states and territories. Archaeological studies are already becoming more commonplace in Australasian forest history and are clearly of even greater significance when conventional documentary sources are scarce.

Localism in Victoria: 1855-1900

It is clear from a variety of research projects I have undertaken (in local and regional history, the historical geography of rural settlement and land use, the history of land degradation, and the development of forestry policy) that, except in the case of agriculture, significant local input into land management has often been ignored. This is especially so in regard to the political process, which often appeared far removed from the common folk. Furthermore, this is despite a wealth of largely untapped historical documentation being recorded at the time in a wide range of community forums in which the thoughts and activities of stakeholders were expressed. Institutional records such as local government council minutes, and to a lesser

extent associated departmental reports, are generally still available today. Meeting minutes, public lectures, reports, deputations and petitions from a wide range of other interest groups engaged in the agitation for, or against, forest conservation were surprisingly abundant but are much less likely to have been archived, particularly because of the comparatively limited longevity and scarcity of resources of the institutions from which they came. The record of less formal involvement, especially the thoughts and actions of individuals working alone or in concert with others in a less institutionalised setting are also valuable, but they are even less likely to have survived and more difficult to extrapolate from. In terms of providing information for an initial survey, the major difficulty with these collective sources is the patchiness of their coverage, and the time-consuming nature of accessing and examining them.

To some extent, local action can be verified from the top down. Governments often meticulously recorded the purpose of, and signatories to, parliamentary petitions; biographical registers record the local affiliations of all parliamentarians; the distribution of trees for afforestation purposes amongst public and charitable institutions and private landowners was recorded; Lands Department files detailed 'improvements' to each and every agricultural and pastoral holding; agricultural collectors' files recorded improvements at the parish level; court records, Crown Land's bailiffs' and foresters' journals documented infringements against forest regulations, and the latter often lists the names of forest workers involved at the local and district level as well as the nature of their work. Forest working plans may also be available, and the landscape itself is a useful historical document when interpreted correctly. It may also be possible to research the 'middle ground' (in Carr's 2000 terms), because of the overwhelming penchant for Boards of Management in mid-nineteenth century Australia. These Boards facilitated the partial devolution of the responsibilities of colonial government. They operated above the level of local councils, and formed an intermediate historical phase between the earliest, often chaotic, stage of government by decree from afar, and the later development of larger, departmental structures. The latter lasted until the second decade of the twentieth century, when many states followed an international move toward the establishment of independent Commissions (of which the modern forest services were an example).

In Victoria, Local Boards of Forest Management were the dominant administrative structure controlling forests between 1869 and 1888, under the 1869 Land Act and the 1876 *Act to Provide for the Care, Management, and Control of State Forest, Timber Reserves and other Crown Lands* (Carver c.1960,

p. 10-11). The minutes of these Forest Boards were theoretically of interest to both government authorities and local communities (all of the forests controlled by the twelve boards were heavily used by nearby communities), and are likely to have been recorded by both. The establishment of these small Boards was a politically expedient response to local agitation on the one hand, and parliamentary reluctance for a more permanent solution, on the other. Broadly sympathetic to afforestation in relatively treeless, arid South Australia, the 1873 Act there encouraged tree planting on private land. This was modelled on innovative New Zealand's 1871 and 1872 legislation (Star 2000, Roche 1987) and was administered from 1875 by a Central and smaller Local Forests Boards—but the experiment was soon crushed by the imposition of greater ministerial control and the establishment of a Woods and Forests Department in 1878 (Legg 1995). The analysis of that colony's early forestry history, using the newspaper survey method outlined below, will be the subject of a separate paper. It is possible, then, that disparate records of local involvement exist at the bottom, middle and top of the historical record. European settlement in South Australia and Victoria predated colonial independence by about a quarter of a century, but the development of modern forestry occurred long after. The early pre-independence phase lies beyond the scope of the present study.

The current phase of my research involves a systematic survey of newspapers taken from representative localities throughout the State in areas identified in my doctoral research as supportive of, antagonistic to, or relatively neutral in the forestry debate. Towns dominated by the following industries have been chosen: mining, timber-milling, agriculture, and grazing; and these are to be compared with the metropolis. For a preliminary survey, newspapers seem ideal because they represent the best single forum for recording and analysing local events. They incorporated and often explained the widest range of diverse 'inputs' into the forestry debate and provide a broad historical context. In themselves, they were an important link in the policy process: recording, evaluating, promoting, galvanising, and disseminating local interests, and they pressured colonial and imperial governments. Particularly in the colonial period, editors saw it as their duty to record the minutes of, and summarise the proceedings of all public meetings (including public lectures) and to pursue the outcomes of any demands. They regularly recorded the transactions of scientific organizations and conferences, and occasionally surveyed relevant literature for their readers. Newspapers afford an unprecedented line of continuity for time-series analysis (often because of their relatively stable and predictable formats); they are often the only major data source before the government record; and they were published six days

a week every week of the year (the parliamentary debates were limited to a much smaller period, and were far narrower by comparison). Whether or not they would support a major investigation of localism in practice was my prime concern.

Newspapers are particularly important to historical-geographers because they allow a detailed examination of regional variations and interactions. They can reveal much about the evolving geography of the forestry debate. There was a complex relationship between newspapers in an almost hierarchical arrangement thanks to a regular and comprehensive network of correspondents and extraction. Newspapers were mailed dutifully to newspaper offices throughout the colony, and relevant information was extracted and published. Correspondents recorded the news from neighbouring communities and provincial centres on a daily basis, and this was in turn communicated up the hierarchy on a daily or weekly basis to the larger towns and cities. Correspondents' reports, extracted articles and editorials from throughout Australia, the Empire, and the world were generally a weekly commitment. Each provincial and metropolitan newspaper sent a monthly summary 'home', (in itself a useful document for verification of the relative significance of events, and for time-series analysis, although they became redundant as technology reduced the tyranny of distance). The 'news from home' was eagerly anticipated (often delaying the presses or causing publication of second or third editions if the arrival of the mail ship was impending). The international coverage was extremely detailed and broad, although selective and culturally-blinkered. As technological improvement progressed (for example with the introduction of the steam-powered ship and the telegraph), the generally two and a half month delay in sending and receiving mail during the 1850s was reduced to five weeks in the 1880s, and by 1885 the 'cable news' from London was being reported in the next morning's newspaper. Australia, and the wider world, had become a much smaller and familiar place.

Over what they regarded as the central issues of the day, editors engaged in debate with fellow editors (the rivalry of competing newspapers in a town sometimes became notorious, but the split on philosophical lines was most prominent—such as between the free traders and protectionists). It might therefore be possible to trace the origins and dissemination of different ideas. At its most basic we can see how issues were dealt with over time within the newspaper: a letter, public notice, deputation, parliamentary statement, report, or extract sometimes being dealt with in further correspondence and/or a later leader article or editorial. These issues sometimes spilled beyond that particular newspaper throughout the countryside via the

hierarchical network described above, and it may then be possible to examine its influence as an output on the policy process, 'from the bottom up'. Top down analyses can then be matched to see which ideas were accepted or rejected before they even entered what Bachrach and Baratz (1970) called the formal 'channel of policy choices', the institutional decision-making arenas such as the parliament or public service (Legg 1995).

Analysis

With only a six week research opportunity, metropolitan newspapers seemed the most efficient place to start, because being at the top of the hierarchy, they recorded the largest number, and greatest hierarchical range, of news summaries from different localities. Although they suffer from the top down bias discussed above, they are fundamental to any comparison, and were integral to the geography of the policy process as described above. Their meticulous coverage of parliamentary debates and papers (including departmental reports, statistical summaries, census, as well as regular political analyses, etc.) is an additional bonus, although, in this case, I had already examined these for my doctoral research. The Melbourne *Argus* was ideal for the purpose. A free-trade alignment meant that the *Argus* identified strongly with rural and provincial interests, even though it antagonised the squatters during the great land debates from the 1850s. It also appealed to merchants and capitalists (unlike its protectionist competitor, the *Age*, which was the working class, or at least an industrial middle class paper). Both papers were avowedly, and sometimes stridently, pro-forest conservation. The *Argus* also published the weekly *Australasian* as its specifically rural arm for landowners, and the publication of the *Australasian's* table of contents in the *Argus* shows that this would considerably repay research into the development of a colloquial forestry – with the 'Yeoman Department' disseminating information on a range of agricultural improvements including the development of plantations.

Every daily *Argus* issue comprised a regular column of correspondents' reports from the country districts (the Country News). The Country News column comprised up to about 40 different districts each day; the larger ones being included every day, smaller ones at least weekly, and the tiniest and remotest communities episodically. The Mining News was a lengthy and detailed page devoted to the gold, and later silver, tin and other mineral fields. It comprised the Ballarat, Bendigo and other goldfields, the sharemarket activity, shareholders' meeting minutes and managers' reports on the mines. Together, the Mining and Country news, along with other leaders,

editorials, public notices, classifieds, etc. allowed a chronology of events for cross-referencing with the provincial newspapers.

To get an accurate and comprehensive historical context, the entire daily paper was read and relevant articles noted, for each issue from an entire year. Excellent secondary sources on Victoria's history exist, but they are no substitute for this level of detail. To obtain a regular sample over a 45 year period between 1855 and 1900, every fifth year was selected, making a total of 3120 issues, with each weekday issue of about 8-12 pages ('supplements' being added when a backlog of letters or special articles warranted it) and Saturday's paper of about 16 pages. Five years was an ideal interval in the sense that every January and December the *Argus* generally contextualised each annual summary by referring to trends and key events within the previous five years. This was also the case with many statistical summaries and reports on issues potentially related to forestry e.g. gold-production, agricultural development, sharemarkets, trade, and international economic activity, demography, etc. Five year intervals were also valuable to identify likely intervening periods of significance.

It is possible to construct a wide range of time-series indicators from the daily 'Intelligence' columns (Shipping, Commercial, Mining, Agricultural Report and Markets, Stocks and Shares) e.g. costs and prices, timber exports and imports, wage rates, production; and regular e.g. monthly or quarterly reports cover other relevant indicators such as the number of steam-engines on the goldfields. There are a variety of standard methods used for the analysis and presentation of media material which will be incorporated in this project – especially variations of content analysis, and these are useful to connect with pre-existing indexed material as well as giving temporal and spatial variations. In addition, new mapping techniques will be used to show the movement of ideas and events through the newspaper hierarchy and across time and space. At its most basic, the intention is to prove the value of newspapers for the study of localism in forestry.

To maintain independence, professionally-researched indexes were not consulted during this initial phase of the examination, but they were incorporated in a second phase to investigate the so-called 'Australian awakening to conservation' during the 1860s (Powell 1976), and to link with my previous analyses of the forestry debate after 1910. Three other, less systematic, pilot samples were done for comparison. The first involved newspapers from eastern Victoria in remote, densely-forested Gippsland spanning each day between 1859 and 1990 (and already completed for a research project in 1991). The second was the *Bendigo Advertiser* for all of 1860, and the first six months of 1865 and 1870 (as well as a few other selected articles); Bendigo,

in north-central Victoria was one of the two greatest gold-mining centres in the colony. The third was the *McIvor Times* for the early 1870s to the late 1890s from Heathcote, a minor goldfields and agricultural settlement in central Victoria. The *Argus* also briefly dabbled with including its own table of contents but, being located awkwardly near the middle or back of the paper, it proved more of a distraction, particularly after it became concerned only with indexing advertisements.

Findings

There are three broad findings from a survey of this type: the context of events; clarification of the nature, timing and direction of the forestry debate; and, somewhat ironically, a determination of what didn't happen. In exploring the *terra incognita* of localism in early Victorian forest history, all three are important. The actual detail—the recording of approximately 800 articles directly related, and many thousands indirectly related to forest history in the *Argus* alone—represents points of departure from which the survey of provincial papers can later be oriented. Individual issues can also be pursued through this paper and beyond into the immediate newspaper network and as inputs into the political process. The articles form, along with the other three major findings, a basis for the construction of a specifically metropolitan view of the forestry debate, and are part of the construction of a broader discourse.

Taken as a whole, and despite the *Argus'* occasionally strident championing of forest conservation, the forestry debate in these ten selected years (1855, 1860, 1865, 1870, 1875, 1880, 1885, 1890, 1895 and 1900) appeared disappointingly insignificant compared to many hundreds of other competing issues. Each year obviously had its major concerns, many of which became persistent throughout the entire survey period. Apart from episodic themes such as wars and colonial defence, economic change and finance, the dominant issues tended to be utilitarian; after all, the *Ballarat Times* noted that 'we are such a disgustingly money-grubbing community' (*Argus* 27 Dec. 1860). Thus, land settlement, gold production, parliamentary reform and suffrage, tariffs, railway construction, water supply, sanitation, 'improvement' through the acclimatisation of exotic plants and animals (and ironically the control of introduced vermin from the 1880s), federation, inter-colonial trade, 'labour sweating', unemployment and health persistently received attention. And these were far more significant not only in mere column space, number and length of articles etc., but also consistently commanded a higher level of attention (e.g. page 4 rather than 7, editorial or leader, number of letters, etc.). By comparison, forest issues (five major and numer-

ous minor categories were used for later content analysis) ranked poorly. In particular, longitudinal analysis shows that forest and related issues decayed quickly within the *Argus*, so that they were at best highly episodic and presumably easily forgotten or ignored. This was despite the apparently cumulative nature fostered by the editorial technique of paraphrasing each new demand for forest conservation with 'yet again we call for...'. Furthermore, the forest debate rarely made news in the 'Monthly Summaries' of the *Argus* (or the *Bendigo Advertiser*) unless very significant political or economic events occurred, such as the successful passage of a parliamentary bill or the establishment of a Royal Commission.

Purely in terms of column space for example, 'Snake encounters' and snakebite cures were of far greater and more immediate concern, but we need to compare the forest debate with other resource conflict issues. Acclimatisation was a related problem, because much of the early forest debate concerned what the 'improvers' saw as the perceived inferiority of native plants and animals. This was a mixed blessing, for although encouraging afforestation and experimentation in general, it also contributed to the widespread lack of concern with forest destruction in the colony. Acclimatisation received far more attention than forestry, although the disastrous spread of vermin and noxious weeds saw a redressing of the balance between the two issues in the 1890s. The sludge nuisance, the vast quantities of effluent from the gold mines which choked the rivers and was deposited over much of Victoria's northern plains (Peterson, 1996), was also a source of significant political agitation.

More particularly, one issue emerged as an exemplar for what theoretically at least seemed to be the likely pathway that forest conservation would follow. That model was the demand for an improved water supply on the goldfields. I recorded the voluminous detail for publication in a later research paper, but suffice to say that the goldfields water supply issue may have been (after land settlement) the leading popular resource conflict issue in Victoria during the late nineteenth century. There was a phenomenal demand for water due to the rapid spread of the use of steam engines on the alluvial and later deep goldfields of the colony, along with the simple need for water on the drier goldfields for washing the pay-dirt (often through 'puddling' or 'sluicing'), as well as water for drinking, washing and sanitation. The increasing depth of mining (especially with technological advances, greater security of tenure, and the success of the 'deep theory') saw the typical surface alluvial mines operated by a single miner or a partnership replaced by hugely-expensive corporate mines. By 1900, gold was being won from alluvial leads and quartz reefs 1000 metres deep. The net demand for

water for the steam engines (most of them ironically used to pump water out of the mines) generally outpaced the water taken from the shafts. So critical was the resource that gold production was said to fluctuate with water supply, and the seasonality of the industry was acutely obvious as miners were forced to stop work (and as infectious diseases spread rapidly) during the summer dry season and in times of drought. A million pounds sterling was spent on one major scheme by the early 1870s, but still the issue persisted.

The water issue was subject to a lengthy and complex political process involving increasingly organised political agitation and representation on and from the goldfields, and the process can be traced in fine detail. Although there were significant disputes over which goldfield should obtain the resulting water supply channelled through an extensive system of canals from distant large reservoirs, and how the water should be distributed on the fields amongst competing users, the water issue was a unifying one which induced alliances amongst even traditional enemies. Mining interests formed associations and as the government apparatus was gradually instituted on the goldfields, they pressured local Councils, Mining Boards and local parliamentarians. The mining unions joined with the managers' and owners' associations, with townsfolk and farmers (the latter with whom they regularly conflicted over miners' rights). The newspapers championed the call and recorded the unfolding agitation, and the media network became critical.

The parallels with the forest conservation debate at first seem striking. It is clear from the newspapers (verified by other research, Legg 1995) that the goldfields were the centre of the demand for timber and, because of this commercial self-interest, their constituents were the single most powerful political lobby fighting for forest conservation. The great irony should never be lost that they were also (after farmers and graziers) arguably the second most powerful force causing forest destruction in Victoria (the splitters, strippers, millers, sleeper-cutters collectively vying with the miners, but supplying them anyway). Consequently, there was something of an uncomfortable (if not unholy) alliance between forest administrators and mining interests through the local Forest Boards and the Forests Department in Victoria before the Great War. By 1870, about one-third of Victoria's annual firewood demand came from the goldfields (1.1176 of 3.556 million tonnes). Like water, the demand for timber (which was also needed for pit-props and ancillary mine construction) fluctuated roughly according to gold production. The same steam engines that needed the water were fuelled by firewood from the timber reserves, and later State Forests, surrounding the goldfields. The demand for timber on the goldfields broadly continued to

increase until the second decade of the twentieth century, and most of the major reforms in state forestry between the 1890s and 1908 (and ultimately 1918) were due to the by then dwindling political influence of the 'goldfields members' in Parliament.

When we trace the forest debate through the *Argus* and the *Bendigo Advertiser*, the same political process of agitation becomes clear, often using strategies and institutions pioneered by the water supply movement. The minutes of meetings, the record of deputations and petitions, the public lectures on the virtues of forest conservation, the questions and motions on the issues put by the goldfields members in parliament, are all recorded. Powerful alliances of mining unions, mine managers, mine owners and local Councils were formed, albeit temporarily and opportunistically. This occurred more frequently on the larger fields; the perception of forests in the smaller fields tended to be more antipathetic. We can also trace the increasing cost of timber due to both increasing scarcity and rising freight costs as the bullock wagons hauled timber from increasingly distant forests. But even at the local level, the issue seemed never as pressing in the selected years of the survey as might have been supposed. Three factors certainly defused or delayed agitation. First, railways were constructed from Melbourne to Ballarat and Bendigo respectively in 1862 (about the time when timber demand on the goldfields was increasing alarmingly as the mines deepened). Eventually, there was the completion of trunklines and a massive colony-wide rail system by the 1890s (Rimmer, 1975 gives a useful overview). This opened up vast tracts of virgin forest lands across the colony to supply the mines. A detailed mapping of inward and outward goods from the different railway stations and railway lines will be an important adjunct to research on the geography of Victoria's forest history. Secondly, successive Victorian governments effectively subsidised the increasing cost of timber by reducing freight rates and easing the costs and conditions of forest operations. Thirdly, Forest Boards (1869-1888) temporarily allowed a greater degree of local control, although unfortunately the result was almost invariably devastating on the forests as local stakeholders raided the timber, and as the resources for policing timber-cutting proved woefully inadequate. Attempts at afforestation and reafforestation were grossly inadequate, despite the provision in the 1869 Act of a Forest Nursery at Mount Macedon. Even the landmark Royal Commission at the turn of the century, which was seen as a triumph of the gold-mining interests, dragged on for years and the political process associated with it largely concerned the struggle against the imposition of royalties and other restrictions which were seen as a burden to many

of the, by then economically marginal, mines. This was especially the case in the smaller mining centres.

Of course, the newspapers reveal a host of other, generally smaller disputes, each with its own profile and sometimes with links to others. These lay beyond the scope of this paper, but are listed below. They include: perennial demand for the alienation of forest lands for settlement purposes; conflicts between timber merchants and local sawmillers (with urban versus rural, and free-trade versus protection overtones); the dispute over the alienation of the goldfields for selection purposes (which frequently involved the loss of timber reserves); the debate about the potential for an opening of the export timber trade with London and other foreign ports; the destruction of forests in water catchments; the 'improvers' debate about the value of native forests and the utility of particular species; the early debates about the merits of tree planting along streets and other public spaces; and the critical question of the climatological and other effects of forests. These and many others received attention in the *Argus*, the *Bendigo Advertiser*, the *McIvor Times*, and the *Morwell Advertiser* (although the latter, reporting from a densely-timbered part of the state was more sympathetic to the pro-alienation lobbies). It is also notable that the influence of particular ideas can be traced, from lines of arguments to specific books (like Marsh's 1864 work) and correspondence (such as Van Amstel's December 1865 letter from Amsterdam published in the Argus two months later [17 Feb. 1866], but not before some of his evidence was published unacknowledged in the newspaper's leaders and editorials).

Clearly, the selection of years is critical. Some important movements had come or gone, or events had occurred outside the sample, and there was little sense from the sheer volume of articles each year from the 1860s that the issues had expanded dramatically or become overwhelmingly pressing. This, in itself, is evidence of the episodic nature of the debate (and the discourse), and justifies further infilling of intervening years. To check my general impressions, a smaller survey was initiated. This involved an examination of the entries recorded in a recently completed professional index of the *Argus* (Suter 1999). Suter's indexes for the period 1860 and 1862-9 contained approximately 540 entries of direct interest to the forest debate (some entries are multiply listed under different headings so double-counting needs to be avoided). It is interesting that Suter's (1990 and 1999) works incorporate far more of interest to forest historians than earlier indexes (e.g. Feeley 1976 and 1988) because the categories chosen for indexing post-date and reflect growing concern with conservation and natural environment. This parallels the changes in perception evident in the nineteenth century

forestry debate (and is sometimes problematic for maintaining continuity in index categories over the long term). Thus, the 1850s debates focussed on 'trees' and 'timber'. These terms were both replaced by 'forests' from the mid-1860s, although significant variations remained for many years. 'Forestry' *per se* didn't become commonplace until much later in the century, although it was always precisely recorded from the earliest European literature. From the late 1860s the term 'scientific forestry' was often used. These changes reflect three interrelated trends: natural evolution of the language from various influences, changing perceptions of forests and forest use, and real shifts in the issues.

The articles identified by Suter and her team were located and examined. They verified Powell's notion that there was an awakening to conservation in the 1860s. Certainly, compared to the 1850s, there was a massive increase and refinement in the forest conservation literature especially in 1867 and 1868. By then, most of the modern themes in the arguments of forest conservationists had emerged (the climatological and disease-fighting effects gradually losing favour during the century, and being replaced by greater emphasis on erosion control and flood prevention). Furthermore, the increasing desperation and proliferation of the forest conservation lobbies, and the increasing degree of organisation in their campaigns, became evident in the late 1860s (despite major reforms in 1865 with establishment of state forests). In part, their desperation is understandable because they were both competing against the huge groundswell of demand for the alienation of Crown lands which resulted in the highly successful 1869 'free selection' Land Act, as well as trying to ensure that that legislation included the seeds for the establishment of local control over Victoria's forests.

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Forest science

6

Joseph Dalton Hooker and Tasmanian flora

Sybil Jack

The influence of personal experience on comprehension and on the evolution of theories is a delicate and difficult subject to examine and is often neglected in the history of science and individual scientists, but young Joseph Dalton Hooker's encounter with Tasmania, and subsequently on the same voyage with New Zealand and Kerguelen and other southern islands, undoubtedly helped to develop his curiosity, form his mind-set, and shape his approach to global theories about botany. Because he was later one of the great authorities on geographical botany, his approach shaped the understanding and attitudes of colonial botanists, including those whose work was primarily directed towards forests and forestry.

Tasmania, and Hobart in particular, was the best jumping off point for James Clark Ross's expedition to the Antarctic and as assistant surgeon on the *Erebus* and botanist to the expedition, a position Hooker owed largely to his powerful connections, he was to have long enough ashore to collect specimens for himself as Ross waited for the short southern summer in which expeditions south might enable him to fulfil his main instructions (Ross 1847). The voyage, which got back to Europe on September 4 1843, gave Hooker approximately six months in Tasmania: three in spring, 16 August to 12 November 1840, and three in autumn, April to July 1841.

Figure 1: Reproduction of a portrait of Sir Joseph Dalton Hooker, Director of Kew Gardens [188?] from *Portraits of Great Botanists.*

Source: Rex Nan Kivell Collection NK7438, by permission of the National Library of Australia.

The expedition was welcomed by Sir John Franklin, the Governor, and his formidable wife, Lady Jane, who had established a Natural History Society of which Hooker was made an honorary member. He was not wholly at

ease with being lionised, but accepted an invitation to go to Port Arthur, on the Franklin's yacht, where he got about 500 specimens (Huxley 1918, p. 106). Lady Franklin wrote of his enthusiasm for her alpine garden where he could see growing specimens which he knew only as dried exemplars (Mackaness 1947) but his main joy was in working with the Gunns. Twenty years later in the Flora, he acknowledges his debt to his main botanical helpers Ronald Campbell Gunn (1808-1881) and his wife, for guidance while in Tasmania.

> I can recall no happier weeks of my various wanderings over the globe than those spent with Mr Gunn, collecting in the Tasmanian mountains and forest or studying plants in his library with the works of our predecessors Labillardiere and Brown (Hooker 1859 & 1860, p. cxxv).

During this time, Hooker, in 1840 a young man barely of age although the promising son of a famous botanist, Sir William Hooker, was persuaded to present a paper to Lady Franklin's newly founded Tasmanian Natural History society, on the fossilised trees of the Derwent found at Rose Garland, which he thought were pines. This, Lady Franklin published without his knowledge in the newly established *Tasmanian Journal of Natural Sciences* (vol I p.25). When Ross borrowed it for the *Voyage of Discovery*, Hooker was dismayed as, in the interval, he had established that it was not accurate (Huxley 1918, vol. I pp. 172-3). It was part of Hooker's first encounter with plants and places unknown to European botanists other than as dried specimens sent to Europe largely by botanical amateurs or collected by the botanists on the naval expeditions of explorations and he was overwhelmed by his own enthusiasm and the prospects of a field of research which he conceived he would have largely to himself as most of the earlier work on Australia had been concentrated on the continental colonies. He was immediately inspired to produce a flora although there were various impediments to its realisation.

In the first place, the time he had available in Tasmania was too short and also its seasonality detrimental to his plan (Huxley 1918, vol. 1 p.137). He had attempted, however, to follow his father's recommendation that in Tasmania he should visit some of the high mountains 'which everywhere afford what I consider by far the most interesting plants' and especially the alga, even if they be known species, so that their distribution can be plotted (Huxley 1918, vol. 1 p.65). The specimens he collected in Tasmania arrived in England in June 1842 plus his illustrations and were examined by Robert Brown as well as Sir William with some enthusiasm. He seems to have

mainly visited the Derwent, the lake districts of Tasmania, Port Arthur, the Huon river and Richmond districts.

What was fatal to Hooker's speedy completion of a Flora was his need, on his return, to find paid employment, the opportunity in 1847 to make an expedition into the largely unknown, to Europeans, depths of the Himalayas and the reluctance of the government to fund the Flora which resulted in the prior appearance of the Flora of New Zealand.

At the time of Hooker's visit to Tasmania, the island was by no means fully mapped let alone explored. Surveyor-general Frankland's expedition in 1835 had visited the upper country. Strzelecki, whose time in Tasmania overlapped with Hooker's, in 1841-2 went from Cape Portland to South Cape, but the Franklins own expedition in 1842 after Hooker's departure, was still defining the course of the range of mountains to the east of Macquarie harbour. The area Hooker visited was confined to the known areas accessible from Hobart, and as he was never to return, he was dependent for species from the more distant areas on the later dispatch of dried specimens from Gunn and others.

By the time the Flora was completed his position, and his botanical understanding, had changed enormously and his influence had become paramount. The 19th century reputation of Joseph Dalton Hooker in the field of botany was by that time, enormous. As director of Kew gardens and herbarium, a position in which he followed his father, he was consulted by all the greatest in the Western world and had a vast list of correspondents, many of whom were also his suppliers of new and unusual plants. He was also well known to the wider world although mainly as the author of Journals. The published journals of his journeys to the wilder and more remote parts of Sikkim, Nepal and elsewhere in India, provided, between dogged accounts of new species, curious and prejudiced accounts of the inhabitants, their life-styles, beliefs and character which pandered to the insatiable appetite of the Victorians for exotica. To scientists he was pre-eminent as a theorist, and Herbert M. Evans claimed that his paper on the Flora of Australia and on the distribution of Australian plants (published respectively in 1859 and 1860) were his greatest 'in a philosophical sense' because they represented the most scientific treatment hitherto accorded a large area from the point of view of a plant geographer.

It is symbolic that his Tasmanian paper—the first, however much he regretted it, to be printed—was on fossils because they were the subject of bitter controversy as 19th century botanists and geologists struggled to understand the flora and fauna of the past. Hooker was to be formally employed to analyse them as part of the geological survey of the British Islands and came to be highly sceptical about the possibility of precisely

identifying plants on the basis of fossil evidence. He wrote in a letter to Bentham in 1846 that with the exception of the ferns, it was impossible to relate the fossils in the coal strata to any existing 'natural order' (Turrill 1963, pp. 44, 77-82). In his introductory essay to the New Zealand Flora he discussed the pattern of fossils in strata, their rise, success, fall and extinction. The problems, logical and analytical, of dating fossils long worried him. As he wrote in his *Himalayan Journals* of the fossils found in the India coal measures at Burdwan

> some of the genera are also recognised in the coal-fields of Sind and of Australia. I cannot, however, think that botanical evidence of such a nature is sufficient to warrant a satisfactory reference of these India coal-fields to the same epoch as those of England or Australia ...
>
> Finding similar fossil plants at places widely different in latitude and hence in climate, is, in the present state of our knowledge, rather an argument against than for their having existed contemporaneously (Hooker 1891, *Himalayan Journals*, p.6).

The need for work on Australia was clear. What was known about the development of Australian flora was very limited. In particular the role of the forest was largely ignored (Veevers 1984, pp. 46-54, 100). Only Strzelecki showed much interest in the composition of the forests. He was concerned with the relationship between forests and climate, arguing that, 'the destruction of thick, herbaceous underwood, scrubs and thick interwoven forest must have necessarily rendered the climate drier' (Strzelecki 1845, p. 239).

Strzelecki, concerned with the need to preserve moisture in a fundamentally dry environment, wrote of the 'bad consequences from doing away with vegetation' and saw a relationship between the different elements of a vegetation 'characterised by lofty trees, ferns, close-tufted graminae and mosses' (Strzelecki 1845, pp. 223, 226):

> amid the apparent sameness of the forest may be often found spots teeming with a gigantic and luxuriant vegetation, sometimes laid out in stately groves free from thickets or underwood, sometimes opening on glades and slopes intersected with rivulets ...
>
> the forest which covers the greatest portion of the country has nothing in common with the forests of Europe. Eucalyptea...rarely yields a shadow... so vegetation of grasses is not impeded (Strzelecki 1845, pp. 242ff, 364).

Strzelecki's aim was, however, partly propaganda—to persuade his readers of the interest and accessibility of the country—and his botanical

insights were largely ignored. After Strzelecki's publication, Hooker was still far from being able to embark on a wholesale work on the Tasmanian flora although he was doing bits and pieces. In the winter of 1846-7 he was naming his and Gunn's Tasmanian Compositae and Coniferae and published this with analysis in the Kew *Journal*. As he wrote to Ross:

> Mr Gunn and Colenso are still employed in making collections in all parts of these islands and are paid by my Father and self for doing so from our private pockets. Under any circumstances I did not think of beginning the publication of either Flora before some months, when their latest collections shall have arrived (Huxley 1918, vol. 1, p. 217).

The payment was evidently, however, of an indirect form which would not offend their sensibilities as gentlemen. (Endersby 1999). In May 1847 he was working on the Tasmanian specimens of the moss, *Dawsonia*, but publication seemed a distant dream. After his trip to India, he turned to work on its Flora, and the *Flora Indica* was published in 1855. His continuing interest in Australia, however, is indicated by his comment in that volume that

> The Flora of Australia is well known to contain far more endemic species and families than any other country does ... (Hooker and Thomson 1855, p. 103).

In 1855, however, Hooker was finally in a position to start sorting out the Australian flora preparatory to at last writing up the Tasmanian material with a promise of government assistance for its publication. His powers of observation mark out facts which were indeed to be worked into late twentieth century explanations of plant distribution. He wrote to Darwin:

> Amongst facts of interest which will one day be licked into shape pro or con species and migration, is that of the South Coast of Australia. I have just made a résumé of the Australian Leguminosae, about 900 species. Of these some 450 inhabit the South West Corner, Swan River &c and about 300 the South east, (NSW &c) but there are not 10 *Species* common to both!

On March 2 he wrote again:

> I am going on with the Tasmanian Flora and find the subject very interesting. Some of the scarcest and most local Alpine plants reappear on the isolated summits of the Australian Alps, and thence too I have the English *Sagina procumbens*, which as far as I know has not been found in the South Hemisphere, except in the Falklands. I am also preparing as I go on for a general work of Geogr. Distrib. of the whole Australian Flora—this is ambitious but it is really the most extra-ordinary thing in the whole world. The Flora of Swan river i.e.

> of extratropical SW Australia, will I believe turn out to be the most peculiar on the Globe and specifically quite distinct from that of N.S.Wales—also generically to a much greater degree than any two similarly situated areas...Whole well marked genera...are absolutely confined to SW Australia ... also taken as a whole the Flora of Tasmania does not present so many species *hardly distinct* from SE Australia as it ought. The Tasmanian species are either very distinct, or quite the same, and what is most curious this applies as well to the alpine plants, though the climate of the Australian Alps must be a good deal different from that of the Tasmanian ones (Huxley 1918, vol. 1 pp. 447-9).

All this meant that by its appearance in 1859 twenty years after his visit, and as a result of correspondence with his friend and associate Darwin and Wallace's work, he had changed his explanatory ideas. Between 1855 and 1859 he shifts from the idea of the fixity of species which was dominant in the botanical world and which he still used in *Flora Novae Zelandia*, to the 'heretical' idea that

> all vegetable forms are in a state of unstable equilibrium; that the rate of change and extent of change vary at different times and places depending on physical conditions; that the majority of main types of existing forms have survived all geological changes from the Palaeozoic (Huxley 1918, vol. 1 pp. 482-3).

He described the introductory Essay to VDL Flora as a 'heretical, hypothetical, clumsy, laboured, cumbrous rigmarole of what I believe to be the correct ideas not yet fully developed owing to backward state of science' (Huxley 1918, vol. 1 p. 484).

The publication in October 1859 of the introduction to the Flora Tasmania revised the views he had expressed in the Flora of New Zealand. He argued that Australian flora was an exception to the ordinary rules of distribution. He took it that it was a place with relatively uniform physical features but instead of many individuals of comparatively few kinds there were many genera and species and few individuals of each. Moreover there were more extra-Australian plants than in the SE. He concluded that:

> The island of Tasmania does not contain a vegetation peculiar to itself nor constitute an independent botanical region. Its plants are with comparatively few exceptions natives of extratropical Australia, and I have consequently found it necessary to study the vegetation of a great part of that vast continent in order to determine satisfactorily the nature, distribution and affinities of the Tasmanian flora (Hooker 1859, p. v).

Hooker's work was not widely read for it was overshadowed by Darwin's which appeared a month later. Hooker had, however, become the great protagonist of geographical botany describing it as:

> a philosophical study in the foremost ranks of science; we allude to the laws which govern the development, progression, and distribution of forms and species; the connection of these laws, not only with one another, but with physical features; and their modifications by geological change (Hooker and Thomson 1855, p. 37)

For much of his life Hooker was engaged in a gentlemanly dispute with some of his contemporaries and employers about the most critical aspects of plant ecology. He thought that soil was less important than height above sea level and climate, and his work in India confirmed him in his beliefs. He was also deeply concerned with finding an explanation for the distribution of plant genera and species across the globe, for which he found Tasmania a critical exemplar. He was, like most nineteenth century Europeans, interested in economic uses for plants and supportive of plant breeding writing that

> we have no reason to suppose that we have violated Nature's laws in producing a new variety of wheat—we may only have anticipated them, nor is its constitution impaired because it cannot unaided perpetuate its race (Hooker 1859, p. ix).

Hooker had a great many insights into cross-breeding and location, arguing that plants

> do not necessarily inhabit those areas which are constitutionally best fitted to them...they do not grow where they would most like to, but where they can find space and fewest enemies...the effects of this warfare are to extinguish some species, to spare only the hardier...of others and especially to limit the remainder both...to area and to character (Hooker 1859, p. xiii).

And elsewhere:

> Plants in a state of nature are always warring with one another contending for the monopoly of the soil...every modification of climate, every disturbance of the soil, every interference with the existing vegetation of an area, favours some species at the expense of others (Hooker and Thomson 1855, p. 41).

He seems to be moving towards the idea of plants finding an evolutionary niche or even to the idea that there was periodically vacant ecological

space (Palmer 1993, Catastrophism p. 3). He wrote in *Flora Tasmaniae* of the curious distribution of some plants

> The cool, damp hilly surface of Tasmania might...be expected to possess a far greater variety of *Coniferae* than any equal area at a lower level in Australia and so it does, but on the other hand the individual species are so local, and present so few individuals, that I believe the island may be crossed from north to south without a single species of this Order being met with. In Australia there are thirty species of Conifers. Nine are peculiar to Tasmania one common to its mountains and Alps of Victoria and another to lower regions. Only five or six species in the SW quarter and one or two in tropics. These thirty species fall into eleven genera, six peculiar to Australia and Tasmania and four to Tasmania (Hooker 1859, III (i) see also Rodway 1903).

Tasmania, in short, was not a separate botanical area but the distribution of plants was peculiar. He wrote about Tasmania and Australia generally that unlike elsewhere in the world:

> the vast majority of the trees are hermaphrodite; this arises from the preponderance of arborescent hermaphrodite Orders (Myrtaceae, Leguminosae) and absence of Amentaceous.

His explanation for distribution was:

> I still hold to a large southern Continent characterised by these and the Antartic types. Perhaps during the Cretaceous and Oolitic periods some of these types existed in the N. Hemisphere also—hence the *Araucaria* cones in Oolite, *Banksia* wood of the sands at Chobham (what age are they?) and cretaceous fossils supposed to be *Proteaceae* in Belgium &c.
>
> Granting with Darwin that the principle of selection tends to extermination of low forms and multiplication of high, it is easy to account for the general high development and peculiarity of Australian forms of plants, these being the remnants of an extensive Flora of great antiquity and which covered a very extensive and now developed Southern continent &c, &c, &c How often do I say all our arguments are two-edged swords? (Huxley 1918, vol. 1 pp. 462-3)
>
> I am combining very many species with Tasmanian and South American plants—many are identical without trace of change which led me to claim some variation for others which belong to very widely different genera...The upshot will be the total bouleversement of our previous idea of the extent &c of the Flora and a very close alliance indeed with Australia. I am really extremely anxious to get the thing well done, but greatly doubt people's being satisfied with my destructuve

> propensities, which however are far more really constructive than those who have few materials to work from and judge by can form any idea of (Hooker 1867, p. 15).

Once Darwin's *Origin of species* was out, he was able to draw out the botanical evidence for it. His introductory essay on the flora of Tasmania attempted to explain the origin and development of the Australian flora in evolutionary terms, which is thought to be the first use of it botanically in print (Allan 1967, p. 78).

One might, therefore, expect him to be interested in the association of different species one with another before the intervention of humans, in other words with what we call primitive forests, old-growth woodland and the like. In fact, he makes little, and then only casual, mention of forests, despite the fact, as the botanist to the geological survey of Britain under Sir Henry de la Beche, he was under the Department of Woods and Forests. The focus of his botanical interest was tightly focussed on the plants, not on any associations they might have formed.

There are of course some passing references to woods. In his Sikkim journals, he makes a brief reference to the then fashionable idea that the destruction of forests had an effect on the climate.

> The climate of the whole neighbourhood has of late changed materially; and the fall of rain has much diminished, consequent on felling the forests; even within six years the hail-storms have been far less frequent and violent (Hooker 1891, p. 30).

His interest in forests as a subject was very limited. When it was suggested in 1869 that he write about the Indian forests, he foresees problems and prefers to recommend that Dr Cleghorn, one of the organisers of the Forest system, be encouraged to do so instead (Huxley 1918,vol. 1 pp,16-17, 83). In the Flora Tasmania introduction, unlike the Flora Indica which appeared before it, he provides no description of the physical features of the island referring the reader to Strzelecki, 'where the relation of the forest to the soil and elevation are well portrayed' (Hooker 1860, *Flora Australia* p. LVI).

While Hooker makes reference to forest from time to time, noting, for example, that there was an absence of great forests in India—that is that there were 'no vast plains clothed with gigantic timber-trees ... although there are some tropical forests', his explanations are perfunctory. His detailed accounts of the various provinces actually goes on to undermine his general claim, as in Mysore where the eastern slopes of the central chain were clothed with dense forest and:

> From the level of the sea to an elevation of 12,000 feet [3657 metres] Sikkim is covered with a dense forest, only interrupted where village clearances have bared the slopes for the purposes of cultivation; and there the encroachment of the forest is with difficulty prevented by frequent fires and the incessant labour of the villagers. The forest consists everywhere of tall umbrageous trees; with little underwood on the drier slopes but often dense grass jungle; more commonly however it is accompanied by a luxuriant undergrowth of shrubs which renders it almost impenetrable (Hooker and Thomson 1855, pp. 93, 95, 96, 136, 142, 169, 178-81).

The normal habitat of the trees are noted in the systemic section—thus Illicium Griffithii is placed *'in montibus Khasia, in sylvia densis humidis,alt. 4-5000 ped'* [in the mountain of Khasia in thick and damp woods 1219-1524 metres] and Talauma Hodgsoni is *'In sylvis densis Sikkim exterioris subtropica, alt. 3-5,000 ped'* [in thick woods of outer sub-tropical Sikkim and a height of 914-1524 metres] and Talauma Rabaniana *'In montibus Khasia in sylvis densis prope Nunklow'* [in the mountains of Khasia, in thick wood near Nunklow], but their groupings are not (Hooker and Thomson 1855, *Flora Indica*, pp. 73-5).

Caught up in the Darwinian idea of competition, Hooker neglects the idea of co-operation or symbiosis and until his death seems to have maintained his lack of interest in forest structure. His influence, in this, was far reaching.

Forest botany in Australia from the time of Maiden's *Forest flora of New South Wales* (1903-1924), and C.T. White's *An elementary text-book of Australian forest botany* (1922) has been more concerned with the individual trees grown, their species, genera and families than with any exploration of the nature of a woodland. The idea of well regulated growth, with trees for particular purposes planted and cultivated together so that they could be conveniently harvested when the time was ripe may go back to Evelyn's *Sylva,* first printed in 1664, or before, but consideration of the woodland as it grew by natural regeneration, with a variety of complementary species self-selected to be suited to the soil, climate and area was less common (Schama 1995,, pp.159-60).

Australian botanists remained on the whole more interested in the systemics of the individual than in the interrelationship of different plants. Although White, in defining terms for his students, identifies ecology as a sub-branch of geographical botany which 'concerns itself with the individual plant or of particular groups of plants in relation to their environment', and he identifies phylogeny as 'the attempt to trace the genealogical history or evolution of groups of plants' (White 1922, pp.2-3), he is primarily concerned with the individual plant as found in Australia not with their

associations. Later botanical textbooks for forestry workers followed the same pattern. In this they faithfully reflected Hooker's attitudes to plants.

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7

Wollemi pine: tree find of the 20th century

J.C.G. Banks

Discovery and identification

When the discovery of Wollemi pine was first announced in 1994 it surprised botanists who may well have assumed that they knew of all the world's extant conifers, and that they only needed to keep abreast of the endless stream of conifer cultivars coming out of the horticultural arena. This new conifer genus has continued to surprise and amaze biologists as its long-held secrets are revealed. These have caused geneticists to recalibrate their theories on genetic diversity and population survival; tree architects to restructure ideas on tree growth patterns; palynologists to solve long-standing questions; and nurserymen to warm their hands. It was truly the tree find of the 20th century.

But let's go back to the beginning. On 10 September 1994 an avid bush walker, David Noble, then a ranger with the NSW National Parks and Wildlife Service, was on his 376th gorge walk with his two companions, Michael Casteleyn and Tony Zimmermanin, in the wilds of the Wollemi National Park which lies within 200 kilometres of Sydney. They were making their way down yet another gorge when he came across a small grove of tall trees with bubbly 'coco pop' bark and frond-like leaves. On the other side of

the creek was typical warm temperate sassafras rainforest. He wondered if it might be a punga or tree fern as he collected a small branch and stuffed it into his pack and got on with the walk. A couple of days later he remembered the branchlet and showed it to two colleagues who agreed it was a conifer probably close to the genus *Cephalotaxus* which is known only from seven extant species in China (Woodford 2000).

More material was needed to ascertain just what this tree really was and a second trip to the gorge was organised in the following month. This time a small female cone was collected which on its external characteristics readily placed this unknown tree in the family Araucariaceae. Did it belong to Agathis or Araucaria? Its foliage was similar in some respects to species of both genera. Breaking open a cone revealed a single naked seed on each scale, as seen in the genus *Agathis*, the kauri pines. Collectively this new conifer possessed features of both *Agathis* and *Araucaria* and therefore represented a new but closely allied genus.

The new taxon needed to be named. The genus was easy; 'Wollemia' after the National Park where it was found. The species naming could follow a well-worn tradition and commemorate its discoverer, David Noble. But here was a problem; it would have to be '*nobelei*' and this would run the risk of the species being called the nobbley pine—an uninspiring name for a 35 metre tall tree. The second and winning option was to give it the name '*nobilis*' meaning noble reflecting its towering straight-boled magnificence. And so this new tree entered the scientific literature as '*Wollemia nobilis*', Wollemi pine. Today three stands are known totalling 40 trees.

Detailed wood anatomy studies readily confirmed that the tree belonged to the family Araucariaceae by having alternate pitting on the inner surface of the tracheids, a characteristic feature of the family. The scanning electron microscope also revealed the anatomical feature that distinguishes it from its sibling genera. This is the degree of wart development on the pit surfaces (Heady et al. in press).

Tree ages and losses

Where and when did Wollemi pine once occur? Palaeobotanists tell us that macro-fossils of Araucariaceae have turned up in many parts of both hemispheres with a fragmentary record going back into the Jurassic Period (206-144 million years ago) making it one of the oldest of the conifer families. A review of Australian fossils from Koonwarra, east of Melbourne, showed samples dated at 91 million years ago from the Cretaceous Period matched with Wollemi pine. Further sub-fossil araucaroid wood from Tasmania

dating from the Pliocene (5.3-1.8 million years ago) points to an araucaria presence further south and where none exists today.

Wollemi pollen provided further evidence as to past occurrences of this genus. The pollen matched with the genus '*Dilwynites*' which has puzzled palynologists who had been unable to place it in a plant family. This pollen is know from pollen records in South America, Antarctica and Australia turning up in the south-west and in northern Australia but most interest came from the Bass Strait records where this pollen was present throughout cores but vanished around 2 million years ago. If this was Wollemi pine then what happened at this time to bring about its demise, and does it provide a time frame for the isolation of Wollemi pine in those gorges in the Wollemi National Park?

While Wollemi pine was proving to be an interesting species, genetic studies have shown it to be astounding. (Peakhall, 1988). His investigations into genetic similarities of the three Australian genera of Araucariaceae showed genetic diversity to be greater between than within species. But in Wollemi pine there was no diversity at all. Individuals were identical. This raises important question as to how what now appears to be an individual plant could persist deep in the gorge country of the Wollemi National Park for what appears to be an extraordinary period of time, perhaps for tens of thousands of years, or even a million.

Another interesting question relates to the extant populations. How old are these trees? Fortunately in one stand a fallen tree was found from which samples could be taken. The National Parks and Wildlife Service and the Sydney Royal Botanic Gardens also agreed to core samples being taken from the wood of five living trees. From these trees it has been possible to answer the age question. The fallen tree had been on the valley floor for some time and the sapwood had decayed. It was a tall slender tree estimated to be 35-40 metres tall. The growth rings were found to be distinct and annual in character which was to be expected given the low winter temperatures with frequent frosts in the gorge. Ring counts therefore provided the age of the sound wood. A total of 384 rings were recorded on the basal sample taken from the fallen tree to which an estimate of the age of the missing sapwood needed to be added to provide the tree age. Outer tree rings are narrow and given that the thickness of the lost sapwood was unknown one can only guess as to how many years had been lost through the decay of the sapwood. Given this it was concluded that the tree would have been 400-450 years old when it died.

Why did the tree die? A solution to this was revealed on examining the bole cross section. It contained a major wind shake, a horseshoe-shaped flaw

embedded about midway out from the centre. I had seen flaws like this in hoop pine in Queensland, a defect which timber millers disliked as they severely degrade sawlogs. They are attributed to major wind storms which bend trees until the bole elasticity is exceeded causing internal failures, called wind shakes. This, plus the observation that the base of the tree was shattered supported the concept that cyclonic force winds periodically sweep through the gorges leaving a trail of damaged, broken and felled trees. A tree ring count from this tree suggested the tree was possibly 350 years old when it was blown down.

Another cause of tree losses is evidently fire. For although fire is an unlikely visitor to rainforests, these gully rainforests are small with extensive edges abutting fire-prone dry eucalypt forest. One of the sample trees showed evidence of past fire about its rootstock which had evidently destroyed the pre-existing tree. Fire must reach the Wollemi pine grove from the plateau above the cliff due to embers or even burning logs tumbling down the cliff. There would be plenty of fuel on the forest floor to support a fire as the shed branchlets from the Wollemi pine do not decay readily and by their very nature produce a well-aerated fuel bed.

Table 1: Bole age estimates of coppice Wollemi pine at site 1

Tree no.	Girth bhob (cm)	Tree/site description	Rings in core sample (no.)	Estimated rings to bole centre (no.)	Estimated age at sampling height (years)	Tree age (years)
9	46	coppice near creek	40	5	5	50
11	95	coppice on high bench	140	3	5	148
18	125	main coppice, high bench	168	10-20	5	178-188
19	130	coppice	117	20-30	5	137-147
20	70	coppice	122	10-20	5	138-148

Tree losses in the Wollemi pine stand are important given the size of the stand because the frequency of tree losses by fire and wind storms will control the mean age of the stand and possibly the maximum ages of individual trees. The derived tree ages for the cored trees provided some interesting insights into this question of population dynamics (Table 1). The data suggest three age cohorts: tree 9 as the youngest c. 50 years, trees 11, 19 and 20 as the next at c. 145 years, tree 18 as the oldest at c. 180 years. The

evidence indicates that Tree 9 is a post-fire coppice while the other trees could have been lost to fire or wind. The important point here is that these data point to at least three periods in which tree losses occurred in the last two centuries at estimated intervals of 35 and 95 years.

The comparison of the tree age estimates with measurements of their girth suggests a mean annual diameter increment of 1.25 centimetres per year for the first two centuries; after that the increment will be less (Table 1). From this data it will be possible to produce an estimate of the age structure of the coppice stand.

Conclusions

Wollemi pine may have existed as relict stands in the Wollemi region for hundreds of thousands of years. Trees may live for 400 years and losses occur from turbulent windstorms which would destroy larger and hence older individuals. Whereas fire from burning material falling into the gorge may cause the loss of trees of any size. The limited data indicates tree losses have occurred at estimated intervals of 35 and 95 years. Tree age data provides some interesting growth rate information from which a population age estimate could be made.

Acknowledgement

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8

Micro-structure of the Araucariaceae

Roger Heady

Introduction

Fundamental to any forest are the microscopic cell structures that execute the various functioning processes of its trees. There are several basic forms, each responsible for a specific job, and though very small in size, are present in millions or billions in every tree so that their combined effects are huge. Photosynthesis in leaves, the conduction of water up the trunk, the absorption of water from the soil, the transportation of carbohydrates from the production sites in leaves to areas of growth, the storage of carbohydrates; each of these essential functions for the tree is carried out by countless numbers of these features.

Because of their very small size, the various shapes and functions of these micro-structures have been known only since the microscope was invented in the latter half of the seventeenth century. Thus, while human knowledge of the forest in relation to its exploitation, flora, and fauna has a history almost as old as civilisation, comprehension of the structure and the inner workings of its trees dates back no further than 1675 and the studies of Anton van Leeuwenhoek and Robert Hooke. These initial researchers

coined the term 'cells' to describe the basic building blocks of plants and animals. By the end of the eighteenth century, improvements in microscope technology had identified the various types of cells and related their form to function. The next progression came soon after 1839 when cameras were mounted on microscopes thus allowing photographs of these microscopic features to be produced (Burgess et al. 1987). The excellent pictures of wood, bark and leaf micro-structure in Baker and Smith (1910) still rank with some of the best that we can do with a light microscope even in modern times. The most recent technological advance, scanning electron microscopy (SEM) first became commercially available in 1965. It produces images at higher magnifications, of greater resolution, and of greater depth of field than had ever before been possible. As a result, our understanding of the various roles of structures in the functioning of a tree has been dramatically enhanced.

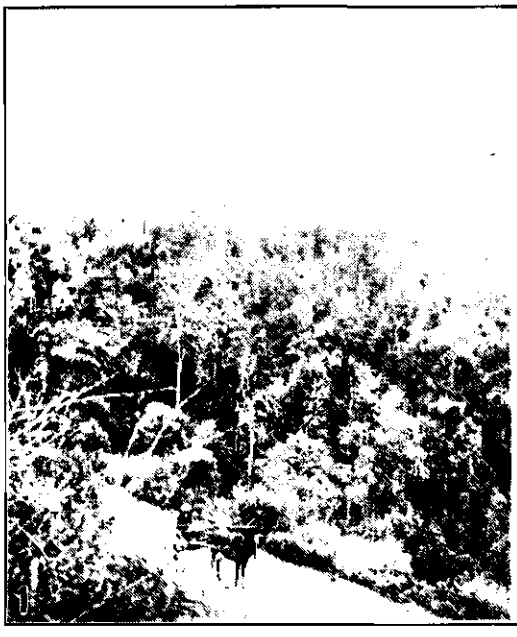

Figure 1:
'Araucaria Cunninghamii Ait. growing on the ranges at Sandilands, North Coast. NSW' (Baker and Smith 1910, p.314).

Figure 2:
'A fine tree of the Queensland Kauri *Agathis robusta*' (Baker and Smith 1910, p.373).

In this chapter we deal with the micro-structure of trees of just one family; the Araucariaceae, but the basic forms and principles of function are similar for all other conifers. The inner organisation of leaves, wood, bark, and roots of various species of the Araucariaceae is illustrated using images

formed by SEM and the likely function of each feature is commented upon. The images are also used to complement some of the light microscopy photographs and hand-drawn sketches that have been published over the past century in various books and scientific journals.

Araucariaceae is a family of conifers whose distribution is confined almost entirely to the Southern Hemisphere. Two of the 43 Araucariaceae species are native to the Phillipines and one to Malaysia (Dallimore and Jackson 1966). Trees of this family are distinguished by their horizontal branches, usually in whorls, and spirally-arranged, scale-like leaves that are leathery and often sharp-pointed (Leahart 1977). All but the most recent text-books say that the Araucariaceae consists of only two genera: *Araucaria* Jussieu and *Agathis* (Lambert) Steudel. However with the discovery of Wollemi pine *(Wollemia nobilis)* in 1994, the number of genera in the family was increased to three.

Ninety years ago Baker and Smith (1910) reported that some species of Araucariaceae in Queensland and New South Wales were 'still standing in quantity' (Figure 1) and that they were 'much desired for their valuable timber' (Figure 2), but the authors also reported that extensive cutting of hoop pine *(Araucaria cunninghamii)* had reduced it to 'almost a tree of the past'. Today, hoop pine and bunya pine *(Araucaria bidwillii)* are common species for afforestation projects in Queensland, while the Norfolk Island pine *(Araucaria heterophylla)* is extensively planted as an ornamental. The kauri *(Agathis australis)* though now sadly depleted is 'held in as much reverence in its native land (New Zealand) as the Redwood is in America' (Leathart 1977).

Leaves

The micro-structure of the Araucariaceae leaf reflects its prime purpose; to capture and use the energy of sunlight in order to convert water and carbon-dioxide into carbohydrate. Figure 3 shows leaves of *Araucaria angustifolia* the South American species known as parana pine. The leaves are scale-like, leathery and sharp-pointed. Figure 4 is an SEM image showing the inner structure of one of the leaves. The outermost single rows of cells are the epidermal layer. They provide the leaf protection from the environment. Immediately inward from the epidermal layer, the cells aligned like rows of sausages are known as the palisade. Their long axes are aligned in a way that offers maximum length of cell for sunlight passing through the leaf. These cells are therefore major sites for photosynthesis. The loosely packed cells in the middle are called the spongy mesophyll. The spaces

between these cells offer opportunity for gas exchange to take place. Figure 4 also shows the transverse end of a vein, a bundle of tracheids that bring water and dissolved minerals to the leaf. This arrangement and division of function of cells in leaves is similar in other Araucariaceae species. The light microscopy photographs of Baker and Smith (1910) one of which is reproduced in Figure 5, indicate that this has been common knowledge for nearly a century.

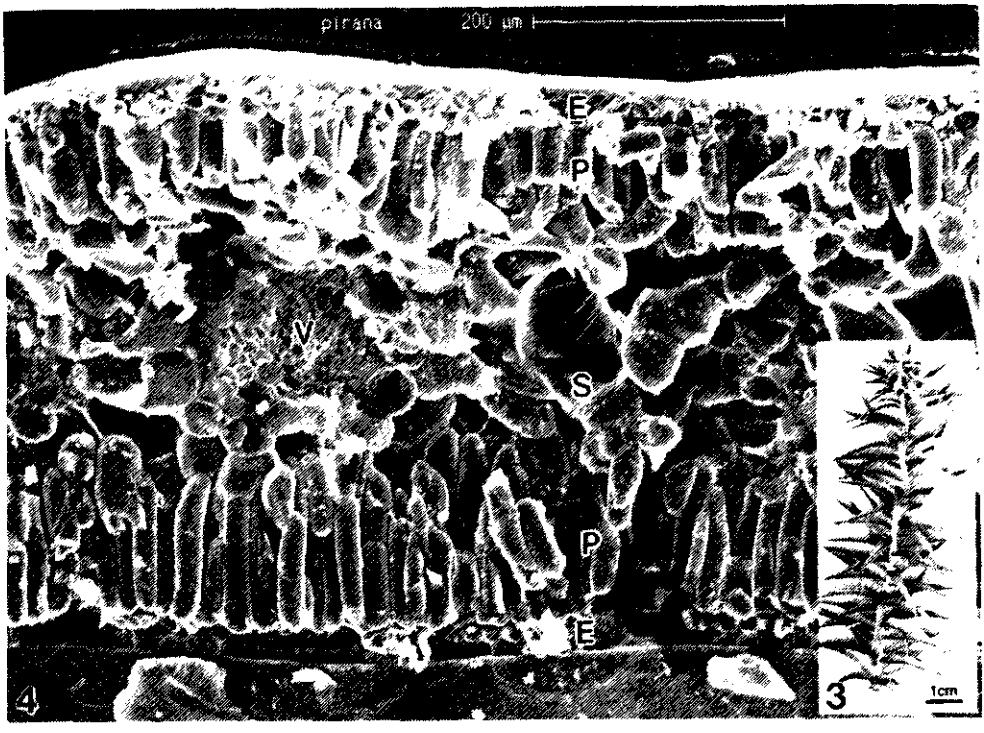

Figure 4:
SEM image showing the micro-structure within the blade of one of the leaves seen in Figure 3. E = epidermal cells. P = palisade. S = spongy mesophyll. V = vein. The scale bar indicates 0.2 mm. Magnification = 144.

Figure 3 (inset):
A branch of leaves of Parana pine *(Araucaria angustifolia)*. The scale bar indicates 1 cm.

The carbon-dioxide used in photosynthesis passes directly into the leaf and its intercellular spaces through tiny pores called stomata. The same stomatal openings are used to rid the leaf of oxygen, the unwanted by-product of photosynthesis. Figure 6 shows stomata on a leaf of hoop pine. The wax that can be seen on the leaf surface is secreted by the epidermal cells. It reduces water loss and helps to protect the leaf surface.

Figure 5:
Light microscope photograph reproduced from Baker and Smith (1910, p.325) showing 'a transverse section through an edge of a leaf of hoop pine, x 378'.

Figure 6:
SEM image of the surface of a hoop pine leaf showing seven stomata. Tiny flakes of wax are also visible. The scale bar indicates 50 μm. Magnification = 600.

Roots

Roots absorb water and dissolved minerals from the soil. They also provide anchorage, keeping the tree standing upright. Water absorbed by hairs on the root surface directly behind the growing tip of the root is transferred into the root xylem. The xylem consists of interconnected hollow tubes called tracheids (Figures 7 and 8). Their purpose is to conduct water from the roots to the rest of the plant. Roots are continuously growing and spreading so they require food for growth. Sieve cells in the root phloem (Figure 8) bring supplies of carbohydrates from the leaves to sustain the growth of the roots. Parenchyma cells store carbohydrates in the form of starch granules. The fibres give the root phloem strength. Epidermal cells afford protection.

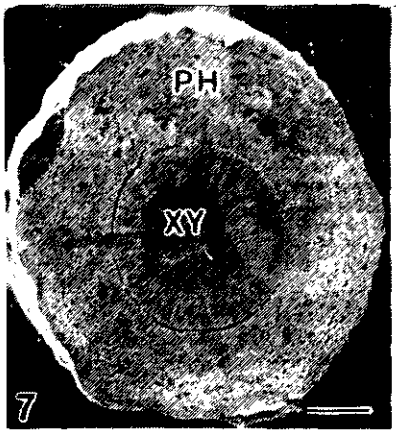

Figure 7:
SEM image of a cross-section through an Araucariaceae root. The xylem (XY) and phloem (PH) are indicated. The scale bar indicates 1 mm.
Magnification = 11.

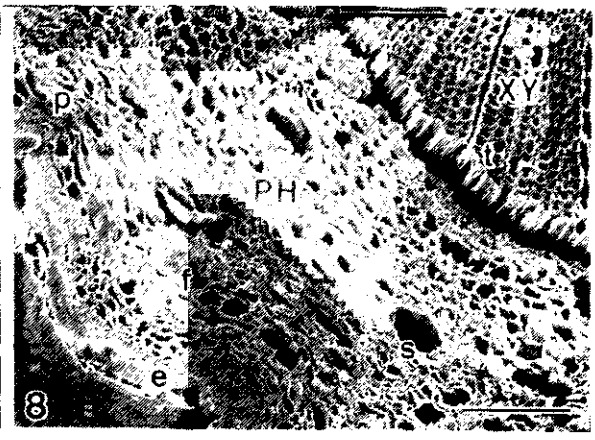

Figure 8:
Close-up view of a section of root phloem (PH) and root xylem (XY) showing tracheids (t) sieve tubes (s), fibres (f) and parenchyma cells (p). The scale bar indicates 0.2 mm.
Magnification = 650.

Wood

The Araucariaceae is a conifer family, and like all conifers, the principal micro-structural feature of the wood is the tracheid, which is basically a hollow tube (Figure 9) approximately 30 μm in diameter and 3-5 mm long. Individual tracheids are inter-connected, thus forming a water transportation network that extends from the roots to the leaves. Tracheid diameter varies seasonally and these differences form concentric 'growth rings' in the trunk of the tree which, to the naked eye are 'moderately distinct in the Araucariaceae' (Welch 1927). Figure 10 is a reproduction of a photograph in Baker and Smith (1910) of a transverse (end-on) view of tracheids in *Agathis robusta* showing seasonal variation in tracheid cavity diameter. Comparison of Figures 10 and 11, which were produced ninety years apart, gives an indication of how the technology of microscopy has advanced during that period.

The arrangement of bordered pits in the walls of tracheids can be used to separate wood of Araucariaceae from wood of other conifer families. Phillips (1948) reported that in Araucariaceae, where pits occur in double or multiple rows within tracheids, the rows have a staggered (alternate)

arrangement (Figures 12 and 13) whereas in all other conifer families the rows are directly opposite each other. Staggered row (alternate) bordered pitting in tracheids of Wollemi pine has been used to 'substantiate its classification in the Araucariaceae' (Heady et al. in press).

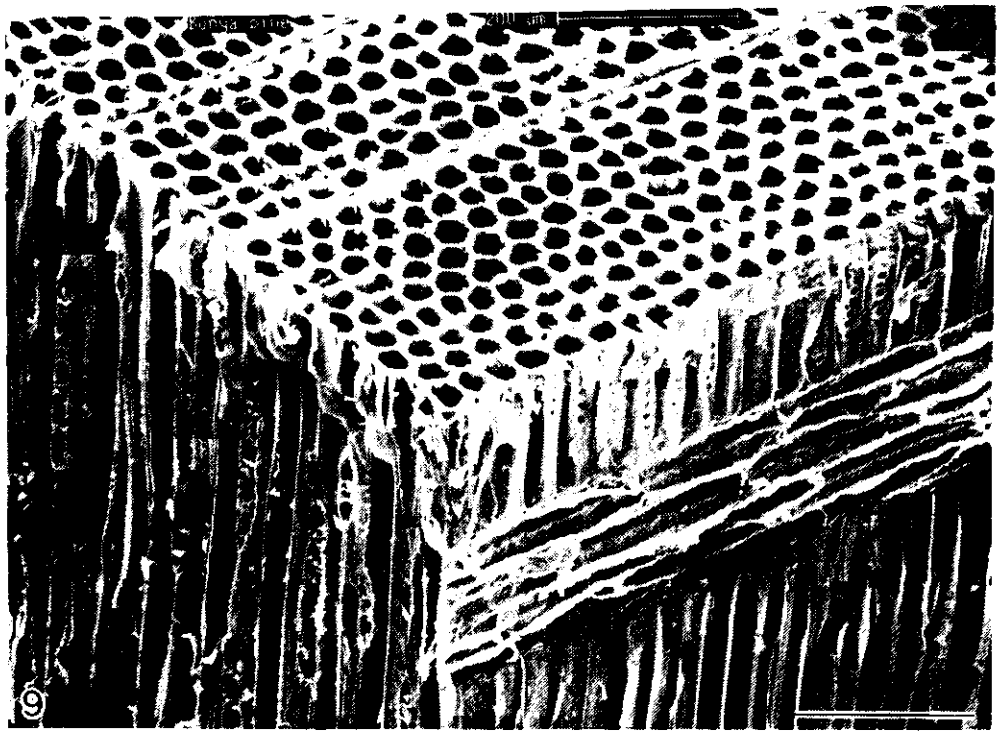

Figure 9: SEM image of the side of a block of wood of Bunya pine showing tubular tracheids (T). The scale bar indicates 0.2 mm. Magnification = 100.

A warty layer lines the inner walls of tracheids and pit borders in wood of most conifer families, including those of the Araucariaceae. Individual warts of the layer are very small, typically only a fraction of a micron (one thousandth of a millimetre) in height (Figures 14 and 15) and are therefore unable to be detected by light microscopy. This accounts for why this wood feature was unknown prior to the advent of electron microscopy.

Approximately 90 percent of the micro-structure of wood of all conifers is in the form of tracheids. The remaining 10 percent consists of bands of radially aligned cells known as rays. Rays provide storage and a radial pathway for the carbohydrates required for growth. Figure 16 is a line drawing by Welch (1927) showing a ray in wood of North Queensland kauri *(Agathis microstachya)*. An SEM image of a ray in wood of hoop pine is shown in Figure 17.

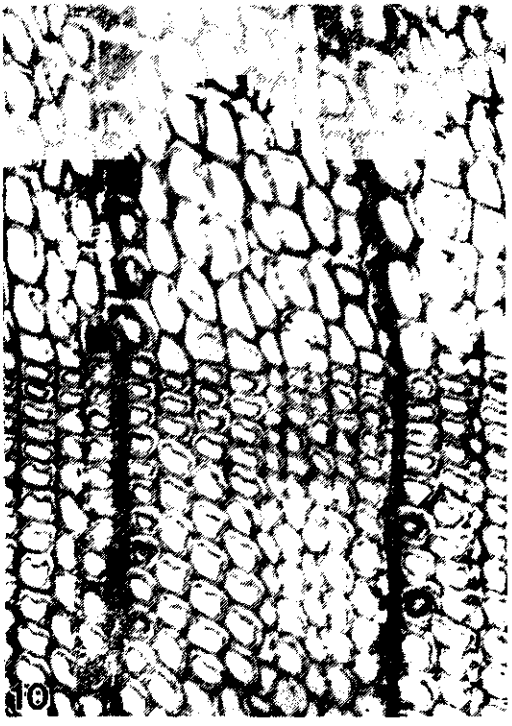

Figure 10:
Photograph from Baker and Smith (1910, p. 378) showing 'transverse section through timber of *Agathis robusta* x 100'. The abrupt change in tracheid diameter relates to slow autumn/winter growth (lower half of the image) and fast spring/-summer growth (upper half).

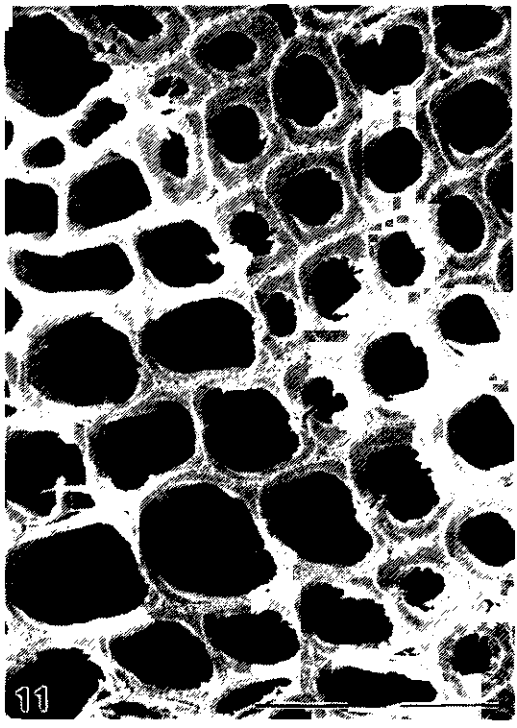

Figure 11:
SEM image of a transverse section of Fijian Kauri pine *(Agathis vitiensis)* pine showing slow growth (upper right of image) and fast growth (lower left). The scale bar indicates 0.1 mm. Magnification = 290.

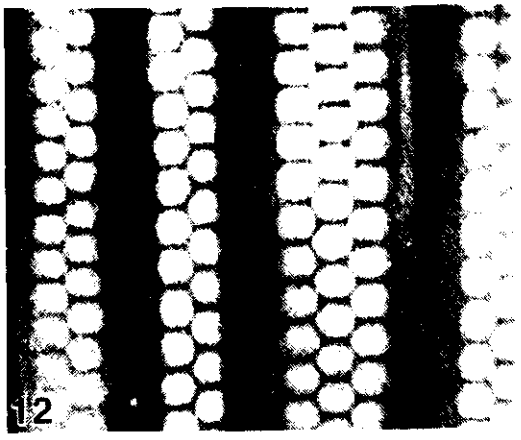

Figure 12:
Light microscopy photograph showing staggered (alternate) rows of bordered pits in *Agathis vitiensis*. Reproduced from Phillips (1948).

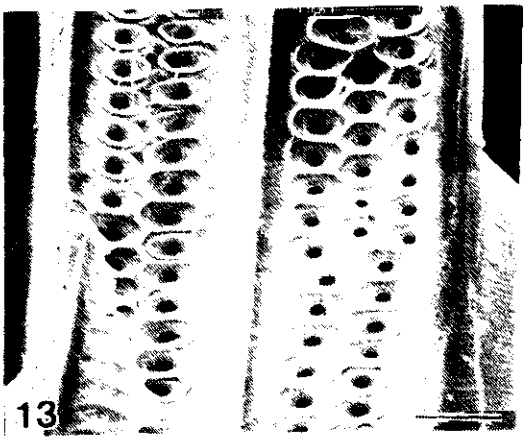

Figure 13:
SEM image of alternate bordered pitting in hoop pine. The scale bar indicates 20 μm. Magnification = 550.

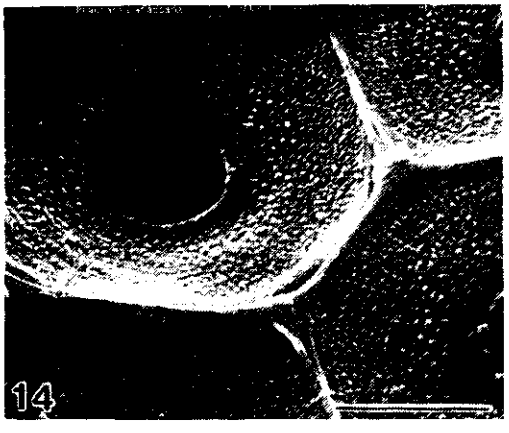

Figure 14:
SEM image of warts in pit borders of *Araucaria aracana*. The scale bar indicates 5 μm. Magnification = 3800.

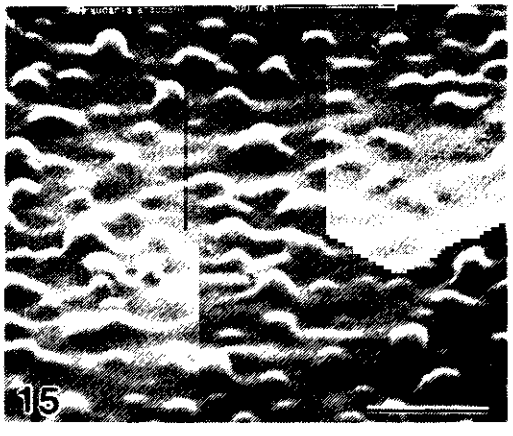

Figure 15:
SEM image showing the warty layer lining the inner tracheid walls of the 'monkey puzzle' tree, *Araucaria aracana*. The scale bar indicates 0.5 μm. Magnification = 30 000.

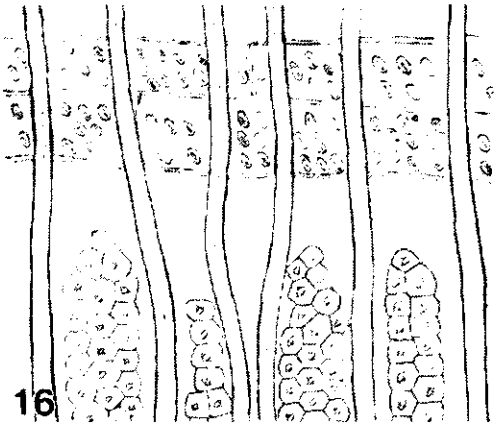

Figure 16:
Line drawing from Welch (1927). 'Radial section, *Agathis microstachya*, showing a narrow ray, two cells in height, and the distribution of the semi-bordered pits. The alternate rows of bordered pits, typical of the genus, are seen in the tracheids below the ray, x 400'.

Figure 17:
SEM image of a three-cell ray in hoop pine. The scale bar indicates 100 μm. Magnification = 240.

Bark

The main function of bark (phloem) is to transport carbohydrates from the leaves down to the trunk and roots. Bark also acts as a protective layer and as a storage place for carbohydrates. It consists of sieve cells for longitudinal conduction of food materials, and fibres (fibre bundles) to give strength and support. Storage of carbohydrates occurs in the parenchyma cells. An end-on (transverse) view of bark of Bunya pine reproduced from a photograph in Baker and Smith (1910) is shown in Figure 18. The SEM image (Figure 19) shows similar features in Parana pine but with far better resolution and depth of field.

Figure 18:
Photograph reproduced from page 365 of Baker and Smith (1910) which has the caption: 'Transverse section through a portion of inner bark, showing the predominance and irregular distribution of fibres. They have a laminated wall structure. *Araucaria bidwilli* x 120'.

Figure 19:
SEM image of a transverse section of bark of Parana pine *(Araucaria angustifolia)*. Walls of fibres (f) show concentric lamination. Starch grains (stored carbohydrate) are present in some of the parenchyma (p) cells. The scale bar indicates 100 μm. Magnification = 270.

Conclusion

The photographs and drawings of authors such as Baker and Smith (1910), Phillips (1948), and Welch (1927) indicate that the ability to illustrate the micro-structure of leaves, roots, wood, and bark of the Araucariaceae was well advanced a century ago. However, it is also obvious that the pictorial description of these micro-structural features benefits enormously by use of electron microscopy.

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Tasmania

9

Government sawing establishments in Van Diemen's Land, 1817–1832

Peter MacFie

Introduction

In 1826, John Lakeland, the Principal Superintendent of Convicts at Hobart Town, advised the Engineer how convict sawyers at the Birch's Bay Sawing Establishment were to be motivated. He recommended a well-tried system of incentives, known as task work:

> As sawyers as well as artificers in general are averse to their trades and occupations being known [and] from not receiving more encouragement than the common labourer, and knowing that being of useful trades is a reason for their being kept by the Government, we beg to recommend that the sawyers be allowed task work ...

In addition, Lakeland suggested, 'their surplus work be taken by Government at a certain price, or be permitted to be sold as an encouragement'. This had the advantage of providing labourers with an incentive as they 'will become sawyers and Government will have the means of punishment in their hands by turning the man of bad habits out of the sawing gang into the labourers'. Unlike the punishment station of Macquarie

Harbour, Lakeland saw the necessity for positive encouragement for skilled workers:

> we beg to recommend ... the necessity of something more than coercion to keep men in orderly and industrious behaviour in so remote a situation, so remote from inspection.

This is a very different station to the Port Arthur Penal Settlement which was established immediately after the closure of Birch's Bay. What caused the change in approach, from financial to punitive motivation in the space of a short few years?

While concentrating on Birch's Bay and North West Bay Sawing Stations however, the full impact of timber production and its effect on Australia's cultural attitudes to forests must be read in the experiences and reputation of Macquarie Harbour, Port Arthur and later the Cascades on the Tasman Peninsula.[1]

Neglected outstations

While the gangs and penal stations of Van Diemen's Land Convict Department are well-known, particularly those at Macquarie Harbour, Maria Island and Port Arthur, virtually no attention has been given to government outstations which also employed skilled convicts. These included men at sawing stations plus lime and charcoal burning and brick-making establishments. Due to the isolated occurrence of raw materials, men worked in small independent groups in often remote and changing locations, yet provided products essential for the building programme for European settlement. In Van Diemen's Land in the mid–1820s this programme was in a boom cycle. These outstations have been ignored by all major historical studies on the convict system.[2] This neglect is perhaps due to their transitory nature which left few visible signs of occupation, and the lesser numbers of prisoners involved. However, the specialist skills needed and the indispensable nature and value of their work is in direct contrast to their small numbers.

The neglect seems to have arisen from the generally held and often simplistic views surrounding Lt Governor Arthur's penal system. Arthur's seven-tiered punishment regime for the treatment of convicts was promoted by him and is popularly accepted today as reflective of the convict system in Van Diemen's Land. However, this view ignores a strong undercurrent in Arthur's approach to management; that is, whatever it takes, get the job done, but don't tell the Home Office. This approach is

exemplified in the role of men who worked in outstations and on special projects such as the Ross Bridge. However, this attitude gave skilled elite workers a privileged bargaining position, and enabled them to take advantage of varying types of task work systems. None appear more 'privileged' than the early sawyers and skilled bush workers at the sawing stations of North West Bay and Birch's Bay.[3]

First Van Diemen's Land sawing stations

These were located in south-eastern Van Diemen's Land, initially close to Hobart and then in increasingly remote localities, but near the source of the best timber stands. Those chosen were always adjacent to water transport. When Lt Governor Sorell arrived in April 1817, 'timber fallers' with the 'timber carriage gang' amounted to eight men. These were probably working at the Cascades on the slopes of Mt Wellington above Hobart Town. The government employed 19 sawyers and four shingle splitters as a specialist workforce. When Major Bell of the 48th Regiment arrived in 1818 he was appointed Acting Engineer and Inspector of Public Works, in addition to being military commander of the garrison at Anglesea Barracks. On his arrival in 1818, Bell reported:

> On my arrival the wood used in common buildings called stringy bark was procured from a place called Cascades about 3 miles [4.8 km] from Town. About a year after, that supply failed and now it is brought by water from North West Bay in D'Entrecasteaux Streights [*sic*] about 20 miles [32 kilometres] off.

Other smaller stations were situated at Kangaroo Bottom (also situated on the foothills of Mt Wellington and later renamed Lenah Valley), and at New Norfolk in the Derwent Valley up-river from Hobart, location of a specialised shingle-splitting gang.

Outstation management

Van Diemen's Land outstations were the responsibility of the Civil Engineers Department, sometimes overseen by a Superintendent of Works, rather than by the later Convict Department which oversaw the larger penal stations. The Engineering Department was headed by a series of military officers, including Major Bell (48th Regt) from 1817–1824 and then Majors Kirkwood and Turton (40th Regt) in 1825 until the arrival of the civilian engineer/architect, John Lee Archer, in late 1827.[4]

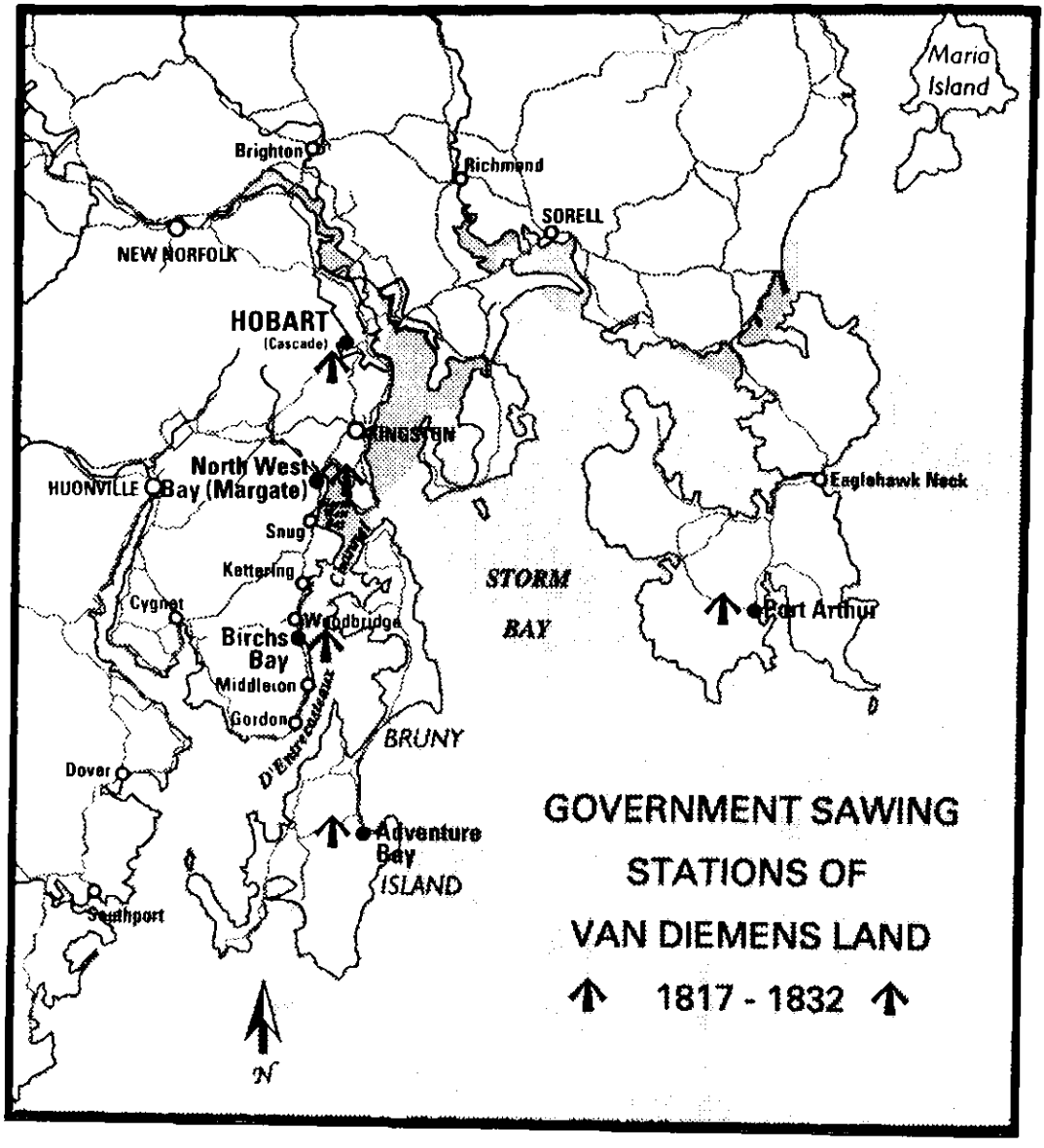

Figure 1: Government Sawing Stations, Van Diemen's Land, 1817–1832.

On location, Superintendents such as Peter Monro at Birch's Bay had no formal legal status and therefore were unable to punish men under their nominal control. The isolation of gangs such as those at North West Bay and Birch's Bay, and the lack of a full penal status probably resulted in a different management relationship between superintendents and the sawyer-prisoners. Major Turton, engineer who corresponded with Monro on the operation of Birch's Bay, believed the Superintendent of this station should have special powers. In evidence to an 1827 inquiry of Governor Arthur, Turton proposed 'the following officers to whom power might be delegated: the Superintendents of Road Parties, who at present are Military

Officers; the Superintendent of the Sawing Establishment at Birch's Bay, where there is no magistrate nor any means of punishment'.[5]

Under new Regulations devised by Arthur in 1824, men at outstations were to work from 8 to 12 a.m., and after a one hour dinner break, from 1 to 4 p.m., with work finishing at noon on Saturday. Regulations provided a hut on a plan of 24 feet by 14 feet [7.3 × 4.3 m] to contain 20 men, supervised by a resident overseer, with a cook for each hut. Correspondence reveals however that the sawyers at Birch's Bay were living in small camps in the forest, with much more freedom than these guidelines suggest. Rather than living in barracks under the watchful eye of constables, the convict workers at outstations appear to have housed themselves in bush huts near the stand of trees to be cut without the supervision of constables.

Reward and punishment: the task work system

Prior to the arrival of Governor George Arthur in 1824, an incentive-based task work system for skilled convicts operated in both Van Diemen's Land and New South Wales. In evidence to the Bigge Enquiry in 1819, both Major Turton and John Lakeland, the Principal Superintendent of Convicts based in Hobart Town, outlined the system of task work whereby each prisoner was given a set amount of daily work, after which the goods produced were theirs for private sale:

> ... brick makers, bricklayers and stonemasons could finish their work by 12 o'clock; the carpenters used to gain a day and a half each week... the sawyers would gain two days... sawyers and brick makers had always regular task work; they in general performed their work by 11 o'clock.[6]

Turton felt that mechanics should have the indulgence of task work; as they were working for the government and not assigned to settlers as other prisoners were, and where various benefits were accepted and obtainable.[7]

These tradesmen or artificers could earn from 5 shillings to 7 shillings and 6 pence extra per day in their own time.[8] Under the system, those workers with the most sought after skills benefited most. This enabled early convicts to establish themselves with financial independence but also led to a high degree of corruption and the use of government property and time for personal benefit.[9] The result as perceived by officials was a high level of drunkenness as artificers spent their cash after hours.[10]

In 1824, as well as abolishing the task work system (in theory), Arthur reinforced punishment at Macquarie Harbour and established it and Maria Island as severe Penal Settlements. In April 1826 he introduced chain gangs

in settled districts to overcome the apparent laxity and to reinforce harsh discipline implied by transportation.[11]

However at North West Bay, Birch's Bay and other remote outstations, such as lime-burners, two different incentive-based systems operated before being discarded. The task work system operated at North West Bay prior to 1824 when government regulations ordered its suspension. Prior to that, Sydney Cotton, Acting Engineer, explained, 'the government sawyers were in the habit of cutting timber for their own benefit at North West Bay, which was sent to Town by boats, hired by them for that purpose'. Cotton claimed unrealistically that the sawyers now 'had no means of cutting timber for their own benefit'.[12] The final withdrawal of the incentive system had repercussions at the newly established Port Arthur Sawing Station a few years later.

Sawing outstations of D'Entrecasteaux Channel

The largest sawing stations near Hobart were at North West Bay (1818–1825) and at Birch's Bay (1824–1831), both situated in the D'Entrecasteaux Channel, south of Hobart and facing Bruni Island. These stations employed skilled prisoners but under less harsh sentences than in the major penal stations. What selection criteria were used is as yet uncertain. North West Bay was one of many geographic features originally named by French explorer Bruni D'Entrecasteaux in 1792. After the British settlement of Van Diemen's Land in 1803, the forests of the Channel which bears the explorer's name attracted the attention of government-appointed gangs, and later private shipbuilders. According to James Kelly, before 1819 North West Bay (and the banks of the Huon) were occupied by 'natives' until they were driven off onto Bruni Island.[13]

Adventure Bay, Bruni Island

A little-known sawing station existed at Adventure Bay, Bruni Island from as early as 1819. The *Hobart Town Gazette* reported in December 1819 that Matthew Fortune, Overseer of Timber Fallers at Bruni Island and Adventure Bay, was allocated a salary of £8 19s per quarter.[14] His gang was probably there earlier in the year when the *Prince Leopold* arrived to take 'pine already cut', returning in March and July.[15] What type of pine is unclear, as stands of celery and king billy pine were unknown.[16] However a period newspaper refers to the 'Adventure Bay pine', as if a distinct species.[17] This station was still operating in 1829, as in April that year Monro wrote of the

shortage of men at Birch's Bay which now consisted of '44 prisoners exclusive of those on Bruni Island'.[18]

North West Bay

At the same time as the *Prince Leopold* was carrying timber from Bruni Island, she was also freighting sawn timber from North West Bay (and Macquarie Harbour).[19] In 1820, Major Bell described the North West Bay establishment which consisted of '7 men and one overseer, who is free by servitude, and 6 to 8 pairs of sawyers during summer'. The men who were 'hutted', had not tried to escape and Bell had 'never had any complaints of their conduct'.

The timber was 'brought up in Government brig, as it is too heavy to bring up in boats or rafts. When the Brig is employed on other services, it is brought up in boats, being first sawed'. Bell believed that the 'establishment' was 'capable of extension' as the 'supply of timber is very considerable and very accessible [as] the land on which it grows is poor and flat'. Bell felt the timber in this neighbourhood was good for building purposes, as 'there is a sort called Peppermint used for shingles, the best for that purpose'.[20] In addition to the *Prince Leopold*, the Government also had several smaller vessels used in naval work in the estuary, including the 'Inspectors [of Works] Boat' with coxswain and crew (all convicts) which was 'used for bringing up timber and taking provisions down the river'.[21]

In February 1820 timber at North West Bay was drawn to the pits with a 'timber carriage' pulled by oxen, one of only three in the Government's use.[22] The 18 'timber fallers and shingle splitters under an overseer' listed were probably the gang located at North West Bay. John Riddell was listed as Overseer of Sawyers in 1820.[23] He was probably John Read Riddell, a carpenter, who advertised in 1824 for specimens of newly discovered Tasmanian timbers.[24] By 1822, the Overseer was a John Read. In July 1822 two men, Edward Payne and Read, were drowned when their small boat capsized on arrival at North West Bay via Hobart Town and Tinderbox.[25]

One of the first indicators of sawing at North West Bay is the arrival of the Government shipping to collect Government timber, the first being the 92 ton HM *Prince Leopold* in December 1819.[26] Captain Chace reported that in 1820 the ship made 10 voyages from North West Bay to Hobart and return for timber.[27] She was also making return trips in May and November of 1822, and February 1823.[28]

In early 1824 a Hobart Town newspaper refers to a 'sawing machine in progress at North West Bay'. This was probably a steam sawmill, as the paper also reported: 'We can now inform our readers that another machine

of a similarly useful kind, is nearly erected within a short distance of this town, and immediately beyond the Cascades'.[29] The location and type of mill at North West Bay points to one of, if not *the*, earliest sawmills in Van Diemen's Land, just preceding deGrave's water-driven mill at the Cascades, but a decade after the first in New South Wales.[30] News of the mill's location coincided with the closure of North West Bay and the opening of a new sawing station at Birch's Bay in 1824. However, North West Bay continued with its 'Government sawmill' and became a ship-building centre with a number of shipwrights, including the Mitchelmore family.[31] Possibly the first construction of a ship there was the 81 ton government schooner, *Waterloo,* built of huon pine by Mr Maycock and launched in August 1822.[32] She immediately began trade under Capt. Kinghorne to Macquarie Harbour, and then to Birch's Bay.[33] The *Prince Leopold* was also carrying timber from North West Bay to Port Dalrymple and George Town in northern Tasmania and to Maria Island.

Birch's Bay Sawing Establishment

Named after T.W. Birch, an early Hobart merchant, ship-owner and exporter with a monopoly in huon pine. Wattle bark had also been cut at Birch's Bay for the tanning industry before 1820. This sawing station followed the wind-down of North West Bay and was operating by late 1824. By November 1826, Birch's Bay was the largest employer of men in the Engineer's Department, outside Hobart and Launceston. A team of 62 men operated, consisting of 30 sawyers (or 16 pairs), 24 labourers, one blacksmith, one carpenter and two overseers.[34] Four 'miscellaneous' workers were probably a saw sharpener, file cutter, tailor and shoemaker. At that date, there were no draught animals in use.

Archival records indicate that structures at Birch's Bay included several on the foreshore. These were a hut occupied by the Superintendent's family, a jetty, and possibly a military guard station as a button of the 11th Regiment has been found by the current owners of the adjoining property, Yellow Point. Inland were a series of sawpits and at least one major 'road' used by the bullock teams to haul timber to the pits in the summer. A semaphore station may have been located there, as 6 constables are referred to as additional to the workforce at Birch's Bay. This may however have referred to the semaphore station at Mt Royal situated to overlook the Channel and the Huon River. This station acted as a warning base for shipping movements and arrivals, and relayed signals to the signal station on Mt Louis further up the Channel toward Hobart. This in turn connected with

the Mt Nelson Station and from there to the major signal mast at Battery Point, Hobart.[35]

Birch's Bay was an active shipping port of call. In September 1825, gales prevented ships from entering the bay and collecting mail.[36] In November that year the government brig, *Duke of York*, called at Birch's Bay for timber en route from Macquarie Harbour to Hobart Town with 4 prisoners on a murder charge.[37] This ship made repeated return voyages to Birch's Bay from Hobart Town. In November 1825 the *Prince Leopold* called at Birch's Bay, then proceeded to Maria Island and Launceston with sandstone for construction of St John's Church.[38] In addition to these two ships calling at Birch's Bay, the colonial schooner *Caledonia* called there for a 10 ton blue gum plank to be shipped to England in the *Cape Packet*.[39]

Over the years 1827–1829, shipping from Birch's Bay continued but was not recorded in the newspapers with the previous regularity. In February 1829 the Macquarie Harbour-built *Cyprus* called at Birch's Bay on her maiden voyage for timber, before returning to be piratically seized by prisoners. In August the same year, also on her maiden voyage, the new 128 ton government brig *Tamar* under Captain Taw called at Birch's Bay from Macquarie Harbour. In December 1829 the *Prince Leopold* called at Birch's Bay for 4 bullocks.[40] The same month the Government sloop *Opossum* left Hobart Town for Birch's Bay.

A few ship's orders indicate both the quantity of timber cut and the uses to which it was being put. In February 1827 the schooner *Waterloo* carried 200 ridge boards for new Government House 16 foot, 7×2 inch (4.8 m, 180×50 mm); 42 flooring boards for a stable at Richmond, 25 coffin boards; boards for a treadmill; quartering for a 'hut in the paddock' and quartering and joists for Government House. In July 1827 the *Derwent* under Captain Taw carried a large order for Government House. These included several 30 and some 10 foot, 12×9 inch (10 and 3 m, 300×230 mm) beams, and 6×3 inch (150×80 mm) joists 22 to 26 feet (6.6-7.8 m) long. Other timber shipped was for the Prisoner's Barracks, Soldiers Barracks, and Blacksmith's Shop, and ranged from boards to beams and battens plus quartering. Both shipping lists are signed by Peter Monro, Superintendent, and countersigned by Captain Welsh, the Hobart Port Officer.[41]

Timber operations at Birch's Bay

The first superintendent at North West Bay was a Mr Wise, who was briefly succeeded in December 1824 by Lt William Gunn (of the Bourbon Regiment). Wise was appointed as Superintendent of the 'Working Gangs employed at North West Bay' on an annual salary of £50.[42] Gunn was at

Birch's Bay and was possibly in charge of both stations during their transitional phase. In late 1825, Gunn was seconded to hunt bushranger Matthew Brady.[43] He was replaced as Superintendent at Birch's Bay by Peter Monro, an apparently unlikely overseer of a gang of sawyers. Monro had arrived in Hobart Town in 1824 and attempted to set up a hat manufacturing business, only to be out-manipulated by competition from Hobart Town entrepreneur Richard Cleburne.[44] Desperate for employment, Monro was 'sent down for four weeks to take charge of Birch's Bay until the return of Lt Gunn'. With the non-return of Gunn after three months, Monro went to Hobart Town to collect his family, re-arrange his business affairs and 'give up my house'. Unable to sell his business, he sent his wife back to Hobart Town to take care of affairs.[45] However, she later returned to live in their 'hut' and gave birth to two children at Birch's Bay in 1828 and 1830.[46] A female convict, Elizabeth Satchell (per the *Lord Sidmouth*) was assigned to Monro in 1825.[47]

In October 1826 Surveyors Hobbs and Scott visited 'the sawing station Establishment of Birch's Bay', and investigated alternative sites. They reported, 'we have examined all the country from Birch's Bay to Egg Island at the head of the navigation of the Huon River,' and suggested a site already identified by Monro 'in a bay on the north side of that river, where there is as much good timber as would keep the present establishment employed for some years'. The men would need to work 'in detached parties, as at present the timber growing round the head of the Bay extended a little from the water inland and over a space of 4 or 5 miles [6.4 or 8 km] in circumference'. The surveyors however, believed the station hardly needed moving, as 'from our own observations and the account given by Mr Munro [*sic*] of the quantity of the timber where the men are now working ... there is abundance to keep the present gang for two or three years at work [both] at Birch's Bay, and along the coast for two miles [3.2 kilometres] to the north and south of the Superintendent's house'. The surveyors noted that the men were laboriously moving the heavy logs and suggested some practical approaches:

> We beg to observe that as the Superintendent is at present provided with no other means of conveying the trees from where they are cut to the sawpits than the strength of the sawyers to roll them, it often happens that the trees may stand in places where without other assistance they cannot be moved.
>
> A couple of steady men, who understand the means of applying tackles would be of a great assistance in getting such trees out of the woods to the sawpits and for a few months in summer, when the

> ground is dry, two or three horses, might be of much service in getting out the very heavy logs.

Supervision of the scattered parties of bushmen was always a problem:

> If the plan is approved of, we beg to observe that it would be necessary for the Superintendent to remove his quarters to where the greater number of the men would be stationed, and put a mile [1.6 km] to the north of Birch's Bay, and that either himself or his free overseer, should every day visit the different parties of detached sawyers and shingle splitters, either by land or in the boat, to muster the men and see they are at work.[48]

Lakeland report

A week later, after visiting the 'Birch's Bay Sawing Establishment,' John Lakeland (Principal Superintendent of Convicts) and G.W. Barnard, marine surveyor, made another detailed report to W.H. Hamilton, Acting Colonial Secretary.[49] They concluded:

> 1st that their [*sic*] is sufficient timber for several years consumption at the rate of present demand of good quality and so situated as to be perfectly available but that the mode at present [in] use of obtaining it is objectionable as being only calculated to take the timber in exceedingly favourable situations and short distances, and the pits are erected upon too permanent a manner for such a method of supply.
>
> 2nd Before we point out any alteration which we conceive are requisite we beg to explain the present method.

The commentators then described the working sawing station:

> The pits are constructed for two, three or four pairs of sawyers and covered in, consequently the side strokes, skids, uprights etc are all necessarily heavy and the erection a matter of considerable labour; so many sawyers upon one pit have soon cut the timber in its immediate neighbourhood which is supplied to the pit as thus:
>
> A road of sufficient width is opened through the scrub and fallen timber, to admit the logs being rolled down upon skids laid in the road to keep the logs up and enable the hand spikes to work: therefore when the timber conveniently situated is used, much labour is required to bring down one log, especially if any inequality of ground intervene, and the men are liable to accidents such as occurred just before we came to the Establishment.

The visitors made recommendations to improve the existing system, relying on temporary sawpits and smaller gangs:

> ... we recommend that the pits be of temporary, light construction for one pair of sawyers in the neighbourhood of three, four or half a dozen trees that may be got to the pit forthwith. When they are done, the pit to be removed and every pair of sawyers to be accommodated the same way.
>
> Four or six trees would employ a pair of sawyers three or four weeks at the least, the erection of the pit would be some two or three hours work. The stuff cut to remain at the pit to be marked, dimensions and quantity when measured by the Superintendent every Friday, re-piled [*sic*] and covered by the labourers, there to reman until it is to be removed by light carriages to a temporary wharf for shipment...

Lakeland recommended the timber be extracted:

> ... not by manual labour but by bullocks or horses [that are] brought to the Establishment in dry weather, with hay, corn for their support whilst there; which is supposed to be only a short time as the distance of carriage would be within a mile [1.6 km], as all the pits and their shifting may for a considerable time be within that distance of the Point of shipment.

A road to the pits should be made at a width of 8 feet (2.4 m). A wharf running into 10 to 12 feet (3.1–3.7 m) of water was 'to admit one of the colonial vessels taking in her lading with the aid of boats' was recommended. Two teams of bullock to haul the timber, plus their fodder, were urged. In the summer months, these would haul six months of timber away:

> Any sawing required for unforeseen requisition might be cut from timber left for that purpose expressly near the wharf that much manual labour might not be required for the transport to the wharf, at a time when the cattle could not be used...

The risk for timber left in the bush was acknowledged:

> as the mode recommended supposes the sawed stuff remaining in the bush until the period of removal for shipment, and therefor liable from depredation whilst boats are permitted to go therefor for sawed stuff; we beg to recommend that all boats be prohibited from going there except by the Naval or other office ...

Birch's Bay incentive system

Lakeland, part of the 'old school' of convict management, agreed with the incentive system, pointing out that the skilled workers, jealous of their craft, could receive higher wages if working for private employers. He recognised 'the necessity of something more than coercion to keep men in orderly and industrious behaviour in so remote a situation, so remote from inspection'. He recommended 'frequent inspection by the Officer in whose department it lays, we respectfully represent as a very necessary and useful measure, a measure necessary in any Establishment, more especially in one so situated & circumstanced'. He also urged that the Government 'retain adjoining lands'.

In a footnoted response, Arthur, having supposedly rejected the task system, agreed to its variant:

> ... considering the distance of this station I shall have no objection to allow the men the advantage of selling to the Government all the wood they cut on their Saturdays provided they actually cut 600 ft [1.4 cu m a day] ... work[ing] for the Government.[50]

He also agreed to preventing non-government shipping approaching the settlement.

From late 1826 until 1829 this variation on the task work system was trialed at Birch's Bay. However, in March 1826, Arthur was still anxious about the revised system. The Engineer Department's Kirkwood, bending the truth, replied to a query from Private Secretary, Capt Montagu:

> In reply to your letter of the 4th, for His Excellency ... there is no task work allowed at Birch's Bay. I have had the Superintendent before me this day, he says from his sawyers he expects a certain days work - 600 ft [183 metres] cut by each pair - circumstances occur wherein that quantity is some times not cut and other days more - but at that average... the young sawyers he says will not do as much until after being some time in training.
>
> I have decided to reduce that Establishment to the number in the margin [46 men] as the timber will be exhausted for Government purposes in the course of few months, I shall ... submit a plan for removing it to some more ... advantageous place...

Monro was instructed that no task work was to be allowed at Birch's Bay, and the Establishment was to be reduced to 12 sawyers, 3 boatmen, 1 file cutter, one blacksmith, 1 tailor, 1 shoemaker and a saw sharpener plus 20 labourers. Six signalmen who did not assist in the station's operation

were included in the total of 46, plus overseers and the superintendent whose salary was increased from £50 to £75 p.a. on 12 December that year.[51] The station was affected by a constant change of personnel. Archer continued:

> I enclose a statement of the men now employed at the station who strike work at 3 o'clock; from this station, scarcely a week passes but some are selected for outstations many are now under orders for New Norfolk and this body of men will gradually decrease.

Nine months of debate resulted in the modified system of task work being eventually introduced. Superintendent Monro asked:

> ... respecting the new mode in which this establishment is in future to be conducted you will ... be pleased to inform me the price which the convicts are to be paid for their surplus labour, also as to what measurement I am to take the account of their extra work, when I will immediately carry your orders into effect.
>
> In the meantime I will make every necessary arrangement for the reception of the bullocks, I have called in all the parties as it will be necessary that all the sawyers are employed at one place or as near to each other as possible.

John Lakeland suggested prices for timber purchased from men cut in their own time:

> I recommend 5/- per 100 superficial ft [0.24 cu m] measure as a fair [return] for the Sawyers extra work. I conceive that a pair of sawyers to cut battens and light quartering would be one 1000 ft [23 cu m] per month, but not more than 800 ft [1.8 cu m] when cutting heavy joists, beams in large quartering—except a few pairs who are expert workmen and industrious men.

In January 1827 Kirkwood alerted Monro that the two teams of bullocks and timber carriages were about to arrive; 'Re teams of bullocks for Birch's Bay... Monro to prepare accordingly (delayed due to timber carriage not being ready till tomorrow—schooner delayed accordingly)'.[52] In March 1827 the task work system still functioned, as Turton instructed:

> ... I have arranged that the timber sawed at Birch's Bay by the men in their own time, should be purchased by the Government at the rate of 5 shillings per 1000 ft [2.4 cu m] ... engineer begs. the following arrangement be adopted without delay.
>
> 1st the timber now ready [value £30] be taken account of by Munro [*sic*] and shipped to Hobart Town without delay

> 2nd monthly account to be made up by Mr Munro [*sic*] and amount remitted to him
>
> 3rd estimated timber to the value of £50 per month will be supplied in this manner.[53]

Prior to his transfer, Major Kirkwood reported that the Birch's Bay Sawing Establishment's 'situation' had been moved. The station strength consisted of 1 Superintendent, 2 Veteran Overseers, 3 convict overseers and 58 men. 8 bullocks were 'hauling logs to the pits' with one timber carriage. The Engineer believed that 'there is something required to manage [the station] properly, it is too much for one man to superintend'.[54]

Equal opportunity for shingle splitters

Monro wanted to know if shingle splitters were to have access to the same privileges as sawyers:

> On entering on the new system, will the labourers still be allowed Saturdays to themselves, if they are, is it the intention of Government to purchase their shingles etc or will they still be allowed the indulgence of sending from the Establishment the produce of their Saturdays labour?[55]

The Engineer requested authority to allow shingle splitters the same price per thousand shingles. Arthur responded; 'under the recommendation of the Committee supported by the opinion of the Engineer, I approve of the arrangement,' but he was still sceptical. Arthur responded to suggested rates in a footnote. 'If 5 shillings per 1000 feet [2.4 cu m] is allowed for the timber, the proportion will be 4 shillings per 1000 shingles, which I have no objection to allow'. Arthur then indicated his motives in agreeing to the system:

> but I beg the Engineer may fully understand that the privilege of working for themselves should only be allowed to men who conduct themselves with propriety - others, at Hobart Town, should be deprived of their Saturdays and labour on it for the Government.

The same system and rate for sawyers and shingle-splitters at other timber outstations was apparently considered, as Arthur concluded, 'I should be glad to be informed what course the Engineer recommends for the sawyers and shingle splitters at New Norfolk'.[56] Arthur was still dubious about the system:

> but as I am not quite satisfied that it is free from a dangerous innovation upon the system of task work which I entirely disapprove of, I hope the Engineer will carefully mark the result.[57]

Birch's Bay bush on fire

Operations at Birch's Bay were stopped by a severe fire in December 1827 which Monro believed deliberately lit by natives. He wrote to John Lee Archer:

> I beg leave to inform you that the bush was observed to be on fire yesterday at Birch's Bay and the thick scrub being very dry, the flames spread most rapidly in every direction.
>
> I got all the hands immediately to work to remove the timber, in order to save it from being destroyed, the men were actively employed until night and succeeded in getting the greater part of it removed but the pits being so dispersed and the fire advancing with such fury, it was impossible to save the whole.
>
> Two of the distant covered pits are burned down and about 4 thousand feet [9.4 cu m] of sawed timber consumed which could not be saved.
>
> The two pits were of little consequence as,the timber about them was exhausted and must shortly have been abandoned.

Monro suspected local Aborigines:

> I suspect the natives to have caused the fire, one of their dogs having been seen about the same time, which leaves no doubt of their being in the neighbourhood.

Arthur saw this as an opportunity to look for a location for a new sawing station on Tasman Peninsula, but another three years passed before Port Arthur Sawing Station was opened:

Shingle Splitters Station, Peppermint Bay

The main shingle-splitters gang was still located at New Norfolk. However, in order to meet the demand for shingles for government projects in the colony, in April 1829 Monro wrote of 'a number men employed lately splitting shingles those of an inferior description which the men split in their own hours and I believe secretly sent away in boats, no boat having been at the Establishment lately for timber'. He suggested 5-6 men be sent down exclusively for shingle splitting, as plenty of timber was available for at least

three years although a road would be needed to bring them out. Engineer Archer urged concentrating parties of splitters rather than having groups working separately in the bush. Arthur commented:

> arrangements of course must be made for a regular supply of shingles - but has not the Engineer an establishment of this nature at New Norfolk - and would it not be more judicious to concentrate the shingle splitting gang either at New Norfolk or Birch's Bay.

As a result of the discussion, Archer drew Arthur's attention to the:

> want of shingle splitters at the Sawing Establishment Birch's Bay, and to request that, as there is a very great demand for shingle splitters for the buildings in progress, the Principal Superintendent may be instructed to attach a convict overseer and five men to the Establishment for the purpose of preparing shingles.[58]

Archer directed a new arrangement for shingle-splitters with a gang to be stationed at Peppermint Hill above Peppermint Bay, just north of Birch's Bay. The name given to the shingling gang's location even today acknowledges the early recognition of this species as being best for shingles due to its durability.

> relative to the concentrating shingle splitters in one gang, I beg to state for the information of His Excellency the Lt Gov that I have fully considered the subject and have received reports from Messrs Turnbull and Monro and of the opinion that a gang of men may be advantageously employed at a place called Peppermint Hill, about one mile [1.6 kilometres] from Birch's Bay and a mile [1.6 km] from the sea beach, where the splitting timber I am informed is good and in great abundance.

After a road was made through the thick scrub, the Engineer believed, '12 men splitting at the rate of 2,000 each or 24,000 weekly may find a supply for at least two years'. Due to their being dispersed in the bush and 'at a considerable distance from the present settlement at Birch's Bay, a confidential overseer will be required. I recommend that the man at present in charge of the gang at New Norfolk be appointed to the situation.'[59]

Mounting queries and costs

Arthur became worried over the expenses incurred at Birch's Bay. In addition to timber cut by men in Government time, the public purse was buying a high proportion of sawn timber from the same workers cut in their own time. This was detailed in a return from Monro and affirmed by Archer. In

1827 privately cut timber was in the ratio of a quarter to that sawn in Government time, while in 1828, the men were producing 'more than half in their own time'. In 1828 the 53 men (assisted by 4 bullocks for 52 weeks) cut 237 529 super feet (560 cu m) of timber as their Government work, (valued at £1009 10s), while in their own time the men had cut 134 418 super feet (317 cu m), at a value of over £571.

Table 1: Timber cut at Birch's Bay

	Timber cut in Government time		Timber cut for payment	
	(Super feet)	(Cubic metres)	(Super feet)	(Cubic metres)
1827	280 760	662	121 570	287
1828	237 529	560	134 418	317
June 1829	113 612	268	5 008	12
Total	631 901	1490	260 996	616

In addition, the price paid to the sawyers and shinglers for timber cut in their own time had risen from 5 shillings to 8 shillings and 6 pence per thousand super feet [3 cu m], while the increase for shingles was from 4 shillings to 8 shillings & 6 pence per thousand. Split posts had risen from 3 pence to 1 shilling each, split rails from 2 pence to 6 pence each, split palings from 2 shillings to 10 shillings per hundred, while split spokes had risen from 2 shillings to 9 shillings per hundred.

Archer gave figures for production over a 12 month period showing a '...profit made only £112 16s 2d over and above what the sale material could be purchased for at the present rate of colonial prices'. He insisted, however, that:

> it should be considered that if the Government were to abandon the present Est[ablishment], and were then to go into the timber market for their materials, a very considerable rise would naturally take place in the price of these articles, so that I conceive the advantage such an Establishment to the Government to be far more considerable than the mere balance as shewn [*sic*] by this account.[60]

Earlier in February 1829, apparently concerned over the working of the task work system, Arthur sent Port Officer Samuel Hill to report on operations at Birch's Bay. He compared savings using oxen to haul the timber against manual labour:

> In obedience to His Excellency's orders ... I proceeded to Birch's Bay & examined the timber in the vicinity of the settlement where I found abundance of the very finest quality in situations offering but little

difficulty to its removal to the beach and sufficiently near for the sawyers to be under the eye of the Superintendent.

Sawn timber of every size up to 9 by 9 inches [230 x 230 mm] may be conveyed with great advantage by hand; for all above that size, the assistance of bullocks indispensable, but as the sizes usually required for the public works fall under 9 by 9 inches, two teams only of bullocks would be required and for which forage would be sent, there being no hay whatever in the neighbourhood.

The result of a comparison between carrying the timber by hand and bullocks is as follows: one man will carry 488 ft [1.49 cu m] per diem, taking an average of all kinds and sizes under 9 x 3 inches [230 x 80 mm]; a team of bullocks will convey 2440 ft [7.4 cu m], so that the labour of five men is equal to one bullock...[61]

Sixths incentive system

The incentive system was succeeding too well, but not in the Government's favour. Civil Engineer Archer believed:

the men, instead of using their exertion during the 5 days, merely manage to keep themselves employed and just to complete their task in time (i.e. 600 ft [1.8 cu m] per week), reserving their great exertion for their own day. The consequence is, that a much greater proportion of work is done on that day, than any other day in the week.[62]

On 30 June 1829, Minute No. 118 ordered; 'Task Work to be Discontinued at Sawing Establishment at Birch's Bay'. Instead a new incentive of the Sixths' was to be given. In discussing the value of work performed, Arthur commented:

... (it) appears that the Saturday work of which the men receive benefit bears a very undue proportion to that performed by them as their Government labour, and it is desirable to abolish task-work in all cases where practicable, intimate to the Engineer I should wish the experiment should be tried which he had recommended in his letter of the 26, of requiring the sawyers to work the whole of the week on account of the Government and allowing them a sixth part of the value of their earnings, after the rate which has been heretofore been paid to them.

At the expiration of three months the engineer will report how far this arrangement compared with the former system, had been beneficial or otherwise to the Government.[63]

Smuggling or a 'system of plunder'?

During early months of 1829 and 1830, timber was repeatedly 'stolen' or illegally sold by bush workers from Peppermint and Birch's Bays. Government officials referred to the trade as 'plunder'. Regulation of the timber supply system appeared to be breaking down in a colonial 'free-for all', as Arthur tried to choose between increased productivity gained by offering his convict bush workmen incentives, and preventing them profiteering on the side. Port Officer Hill reported:

> ... [due to] the nature of the ground, the practice is to carry it [from distant pits] to the nearest beach where it is stacked and left until embarked for Hobart Town, [and] this system offers both opportunity and temptation to plunder and occasions considerable loss of time when the vessel arrives to load,

Due to the tides and shallows,

> the boats are unable to work at all times, and the men from the boats being at a distance are obliged to carry the timber a considerable way through the water which in winter is found to be severe service.

Hill suggested the remedy lay in bringing all timber to a central location:

> I beg therefor [*sic*] to propose the following remedy: that a small punt... be attached to the Establishment Depot at the jetty near the Superintendent's Hut, here the timber would be in a place of security and much time saved when vessels arrived to take in their cargoes, with this aid,...timber may be supplied at the present rate of consumption (600 ft [1.4 cu m] per week) for several years.[64]

Monro wrote to Mulgrave the Police Magistrate, defending his supervision of the sawn timber:

> Re: timber stolen from Peppermint Bay near the Establishment
>
> I beg to inform you that there being no Establishment timber sawn there at present except what the sawyers may have cut in their own hours, which ought to have been delivered to the Government for payment,

Monro blamed the infrequent Government shipping, resulting in the illegal trade:

> the men having difficulty in getting it sent away when cut, the Government Vessels not coming regularly for that purpose, I believe they do frequently smuggle it away, there being several boats employed in this River which I am informed secretly bring men

> supplies, which is a great temptation to send their timber surreptitiously away.
>
> I cannot therefor attach much blame to the men but could these boats be prevented from coming it would be the only effective means of preventing the boats coming near the beach [it] being very much exposed to plunder. Boats have frequently been seen but the parties have always escaped with impunity.
>
> The men are sent to Town in charge of Constable Tylem who has confessed to me to have put the timber on board the boats which the constables secured.[65]

In addition, Monro noted that at least two small schooners were seen around the beaches at Peppermint Bay and Birch's Bay. These were owned by Gwynne, seen leaving with an illicit load in 1828, while a boat of Stephen Gould lay at anchor nearby.[66] Unable to prove its ownership, Monro had an overseer stay on board until the ship reached Hobart.

Mulgrave reported that government timber was seized from a boat at Oyster Bay, but the prisoners 'considered the sawn and split stuff their own'. Mulgrave asked: 'Would not a Government Order prohibiting persons from purchasing timber of convicts without permission from some authority prevent the evil?' Given the isolated state of the station, this was a naive expectation. Port Officer Hill rejected Monro's reason for the disappearance of timber, and provided evidence of the sailing schedule of government vessels, 'by which it will appear that the circumstances arise from some other cause'. The timber it seemed was being 'stolen'. Hill's list of government vessels with their dates of departure from Birch's Bay, includes the *Swallow* (16 ton sloop), *Tamar* (a new ship built at Macquarie Harbour), *Rambler* (16 ton sloop), the *Opossum* (30 ton sloop) and the *Clyde* (30 ton cutter.)[67] The *Swallow* and *Mary* made monthly round trips, with the *Swallow* returning four times in July 1830 for example, out of a total of seven vessels calling at Birch's Bay for the month.[68]

Port Arthur: a new sawing station planned

Arthur sought a secure location where his workers could not negotiate with private operators and where small vessels could not approach. The attractive option lay across the Derwent estuary on the Tasman Peninsula. On the southern coast was a secure bay, Stewart's Harbour, with huge trees to the water's edge. Arthur needed three years of convincing that the move was right, but in 1830 bushmen from Birch's Bay and Macquarie Harbour

were sent to establish the new Sawing Station at Port Arthur. Correspondence reveals that the move to Port Arthur was instigated as much by the need to prevent theft of and illicit trade in timber, as by the need for a penal station. Principal Superintendent of Convicts, James Gordon on inspection in January 1829 observed that, 'by moving the Establishment to Port Arthur the existing system of plunder will be entirely frustrated. Only inconvenience will be a delay in getting timber'.[69] His comments were reiterated by Port Officer Hill the following month who commented on the need for security and avoiding the situation at Birch's Bay where 'this system offers both opportunity and temptation to plunder'.[70]

Meanwhile Monro was preparing demountable huts for the move to Port Arthur. Large amounts of timber still remained on the beaches of Birch's Bay and he was having difficulty clearing the backlog of sawn timber. In addition he wanted more nails to assist in covering the saw-pits, 'and the erection of huts on Bruni Island and at the Signal Stations'.[71]

The first group of sawyers sent to Port Arthur from Birch's Bay were 18 men, trans-shipped aboard the *Derwent* from the *Tamar* which had come from Macquarie Harbour on 7 September 1830.[72] They were to be followed by a group from Birch's Bay consisting of one overseer, 2 timber fellers, 4 sawyers, 5 shingle splitters, one shoemaker, plus a detachment of one officer and 15 soldiers.[73]

On 22nd September Lt John Russell, the first commandant, reported from Port Arthur, 'the men are housed in comfortable huts and sawyers are at work in the sawpits'. Arthur commented, 'This is very satisfactory indeed-now as soon as you can prudently do so, cause the Birch's Bay Establishment to be altogether abandoned'.[74]

Port Arthur Sawing Establishment: from incentive to a punitive system

The Birch's Bay timber workers, used to their privileged position, were at the forefront of a strike at Port Arthur in October 1830 when they confronted Commandant Russell over rations and conditions, believing 'they were all led to accept that they were coming here, not as punishment, but as an indulgence'. Russell argued;

> In all respects I have no fault to find with the men... if the above suggestions are carried into effect, the produce of the Settlement will be greater and the necessity for severe punishment or coercion measures far less frequent'.[75]

Arthur conceded; three weeks later, Colonial Secretary Burnett advised all men would receive the same rations as the men at Birch's Bay had, except those from Macquarie Harbour who would receive the same ration as issued there.[76] However, the cooperative or incentive method did not last at Port Arthur. The change to a fully punitive penal station coincided with a change in official policy, particularly following a visit of Govenor Arthur in December 1832. New harsh regulations were issued and implemented by commandants Lt Gibbons (1832–1833), and especially Lt Charles O'Hara Booth (63rd Regt) (1833–1842), who was to have the greatest influence on the structure, operations and reputation of Port Arthur Penal Station.

The later introduction of tramways, steam powered sawmills at Port Arthur, and the opening up of another timber station at Cascades Probation Station on the north coast of Tasman Peninsula in 1842—also with a steam sawmill—added to the timber output and bleak reputation and conditions experienced by the convict bush workers. However, the role of the outstations in the convict system and their influence on colonial culture and the national psyche is yet to be fully assessed.

Acknowledgement

The author wishes to thank Marie Giblin for assistance in preparation of this paper, and whose bush block overlooks Birch's Bay.

Notes

1 This inter-relationship was first explored by the author while historian at Port Arthur Historic Site in 1984-1990, and outlined to forestry workers at seminars held at Premaydena by Ann McConnell and Fred Duncan, c. 1987.

2 Absent, for example, from A.G.L. Shaw's 1966. *Convicts and colonies.* Faber.

3 Neither Shaw nor Robson discuss these privileged convict elites. The recent *Convict workers* (Nicholas, S. 1988. Cambridge University Press) appears to focus on a narrow definition of elites, associating it with literacy and urban employment. see p. 98 ff.

4 see *Australian Dictionary of Biography* vols 1-2. In 1836, Lee Archer and his Civil Engineering Department were replaced by the Royal Engineers who oversaw convict and military ordnance. see MacFie, P. 1982. The Royal Engineers in Colonial Tasmania, Proceedings Engineering Heritage Conference. Melbourne: Institution of Engineers.

5 *Historical Records of Australia* (HRA) Series III (5), p. 642.

6 A form of 'task work' apparently survived in Australia well into the 20th century. Brick makers at the NSW government brick works were set 'quotas' to fill on a weekly basis until post WWII. pers comm. (anon.), 2002.

7 HRA Series III, vol. 5, p.642.

8 HRA Series III, vol. 5, p.644.

9 MacFie, P.H. 1988. 'Cobbers and dobbers'—informers and mateship among convicts, officials and settlers on the Grass Tree Hill Road, Richmond, Tasmania. *Tasmanian Historical Research Association Papers and Proceedings.*

10 Bell to Bigge, HRA Series III, vol. 3, p. 232.

11 The first chain gang was assembled on 24 April 1826 in Hobart Town and became established under regulation from 9 August that year. Examination of T. Kirkwood, Engineer. HRA Series III, vol. 3, p. 640.

12 Colonial Secretary's Office (CSO) 1/37/659, Engineer to Lt Gov. Arthur, 1/37/659, 14 Oct 1824. All colonial government records quoted are held by the Archives Office of Tasmania. (AOT)

13 HRA Series III, vol. 3, p. 461.

14 Pybus, R. 1988. *South Bruni Island, Tasmania.*. Hobart, p10; also HRA v. 3, p 600. Murtagh (sic) Fortune was a pardoned convict who was sentenced in 1789 and arrived in Australia per Atlas in 1802. Schaffer, Irene (ed.) Land Musters, Stock Returns and Lists, VDL 1803–1822, p 180.

15 Nicholson, Shipping Arrivals and Departures Tasmania 1803–1833, v. 1, p. 54-5.

16 pers comm, Fred Duncan, botanist, Forestry Tasmania, 2002.

17 *Hobart Town Gazette* 1 October 1824, p. 2, c. 1.

18 CSO1/217/5215, 8 April 1829.

19 The later North West Bay village was renamed Margate c 1850, but the small stream nearby retains the name North West Bay River.

20 While Macquarie Harbour Huon pine was bought from Mr Birch the merchant at inflated prices, the Engineer reported that ship load of the common cedar 'or what is called pencil wood' was procured from the Huon River.

21 HRA Series III, vol. 3, pp. 236-43. Bigge Enquiry, examination of Major Bell.

22 HRA Series III, vol. 3, p 558. The other two carriages were 'occasionally employed drawing timber to the yard for the sawpits at the lumber yard in Hobart Town'. The timber carriages were probably similar to those used at the Pennant Hills Convict Sawing Establishment near Sydney, which were two wheeled vehicles and carried the butt of the log, allowing the trunk to drag on the ground, churning up the soil. In so doing, the tracks became impassable mud slides in winter (mud and inaccessibility was given as a reason for the move from Mt Wellington to North West Bay), see Hawkins, R. 1988. *The convict timbergetters of Pennant Hills.* Hornsby Historical Society.

23 HRA Series III, vol. 3, p 555. 12 February 1820.

24 *Hobart Town Gazette* (HTG) 1 Oct 1824. A pardoned convict, John Read Riddell arrived per *Guildford* in 1811. Schaffer op. cit., p. 190. Riddell purchased huon pine from the colonial government in 1823. HRA Series III, vol. 3, p 348.

25 Nicholson, p. 81.

26 Nicholson, p. 57.

27 HRA Series III, vol. 3, p. 489. Captain Chace claimed she was unable to carry huon pine from Macquarie Harbour being too deep to cross the bar at the harbour entrance, but by 1822 was used on this route. Nicholson p. 78. This ship was not ideal for working in shallow waters such as the Channel, as she was built of blue gum making her very heavy and with a 12 ft draft and unable to come close for inshore work.

28 Nicholson, pp. 78, 85. North West Bay was also a port of call for small boats. In July 1822 two men, Edward Payne and a Mr Read, were drowned when their boat capsized on arrival via Tinderbox. ibid, p. 79.

29 HTG 9 Jul 1824 p 2 c 1.

30 O'May, Harry. *Hobart river craft and sealers of Bass Strait,* n d c 1960. p 22. The first steam sawmill in NSW was John Dickson's, imported aboard the Earl Spencer in 1813, and launched by Lt Gov Macquarie on 29 May 1815. The one engine also ground grain. (Ellis, M.H. *Lachlan Macquarie,* Discovery Press, Penrith, 1972, p 276.) In NSW in 1825, a sawmill powered by bullocks was imported at a cost of £2000 and erected at Cowan Forest on Sydney's North Shore adjacent to the Pennant Hills Convict establishment. Hawkins, Ralph. *The convict timbergetters of Pennant Hills,* Hornsby Shire Historical Society, 1994, p. 88-9.

31 Other ships built there were the *Pearl* (February 1834), *Eliza,* (November 1836), *Bussadorah Merchant,* (December 1837), and *Isabella* (June 1840.) Nicholson, 1834-42, v. 2, p. 164, ship's index. During the 1840s Elkanah Mitchelmore and his sons built several coastal traders at North West Bay, starting with the cutter *Gratitude* in 1841, two masted schooner *Mystery* in 1847, 73 ton schooner *Union* also with two masts in 1848. (Mitchelmore Family Records; used with permission.) Assigned convicts were still working there in October 1848, when four prisoners escaped from NW Bay in a boat of Mr Webb. Hobart Town Advertiser 27 Oct 1848 ff.

32 Maycock: possibly early whaler with Maum at Bruni Island. see Nicholson, ibid.

33 Nicholson, p. 79.

34 CSO 1/17/291, p. 13.

35 Today the village of Woodbridge c 1850 is located near Birch's Bay.

36 Nicholson, p. 107.

37 ibid, p. 108.

38 ibid, p. 109.

39 ibid, p. 117.

40 ibid, p. 164.

41 CSO1/17/291, 2 Jul 1827.

42 HRA Series III, vol. iv, p. 268; also Gunn's letter to Arthur re remuneration. CSO1/162/3882, 9 May 1826.

43 HRA Series III, vol. iv, p. 372. Gunn was obviously an active and dominating commander, as in September 1825 he was detained from his position by Lt Lockyer and given command of a party in pursuit of the Brady Gang of bushrangers. During an exchange with the gang at Sorell, Gunn was severely wounded, requiring the amputation of an arm. Henceforth known as 'Wingy' Gunn, he became Superintendent of the Hobart Prisoners' Barracks.

44 Monro was using 'colonial fur' in his hat manufactory located in Bathurst Street, Hobart. His use of native animals for hat making suggests he may have made use of the skin trading potential of his new position at Birch's Bay. HTG, 29 Oct 1824, p. 4, c 1. for Cleburne, see ADB v. 1, p. 229-30.

45 CSO1/115/ 2883, 23 Apr 1827.

46 Hobart Town Courier, 2 Feb 1828 p2.

47 Tardif, Philip 1990. *Notorious strumpets and dangerous girls, convict women in VDL 1803–1829.* Angus and Robertson, p 731; also her records, CON 40/9, AOT.

48 CSO1/17/291, October 1826.

49 for Lakeland, see ADB, v. 2. pp. 69-70; for Barnard, marine surveyor, see McKay, Anne (ed.) 1962. *Journals of the Land Commissioners for VDL 1826–1828*, THRA, p. 131.

50 This compared to 700 super ft per week expected from sawyers at the Pennant Hills Sawing Establishment, NSW. see Hawkins op. cit.

51 CSO 1/17/291 p. 39. The men's statement is not extant.

52 ibid, Memorandum 23 Jan 1827.

53 ibid, 14 May 1827.

54 CSO1/37/640, 14 Jan 1827.

55 ibid, 17 Jan 1827 Monro-Kirkwood.

56 ibid, 14 May 1827.

57 ibid, 14 May 1827.

58 ibid, 20 Apr 1829 .

59 ibid, 3 Jun 1829.

60 ibid, 22 Jun 1829

61 CSO1/215/1525. 15 Feb 1829.

62 ibid, JLA - Parramore, 26 Jun 1829. Another form of 'Task work' was reintroduced in VDL during the 1840s as part of the Probation System. Prisoners could 'earn' a reduction in their sentence by productivity and good behaviour. see Thompson, John 2001. 'Old Wharf Probation Station', in *Tasmanian Historical Research Association Papers and Proceedings.*

63 CSO1/17/219, 30 Jun 1829. The timber workers weren't the only prisoners providing essential services who worked on the sixths incentive system. In February 1828, Civil Engineer Lee Archer recommended the lime burning gangs 'be allowed a sixth part of the produce of their labour for their own benefit, instead of the present established system of burning a certain portion of lime every week for the Government, and being allowed to burn for themselves in their own time'. Arthur grudgingly agreed: 'I certainly cannot say that this is an arrangement which I think in any way desirable, but I am most desirous that the works should not be impeded from want of lime, I yield..'. These gangs were located at Hobart Town, Launceston, New Norfolk and 'Cooley's Shell Lime Party'. Colonial Secretary Burnett suggested that instead of the men selling their sixth, the Government purchase their private output and the proceeds be deposited in the Commissariat until 'such time as a Savings Bank be established'. Whether this last idea was adopted is unclear. CSO1/162/3882, 26 Feb 1828.

64 CSO1/215/1525. 15 Feb 1829.

65 CSO1/17/291, 5 Feb 1830.

66 ibid.

67 These shipping movements are more frequent than those listed in other sources, including Nicholson, v. 1 and 2.

68 CSO1/17/291, 9 Feb 1830.

69 ibid, 24 Jan 1829 Pr Supt James Gordon - Colonial Secretary.

70 ibid, 15 Feb 1829 Port Officer Hill - Colonial Secretary.

71 ibid, 21 Jun 1828 Peter Monro - John Lee Archer.

72 CSO1/483/10748, 9 Sep 1830, in Brand, Ian Penal Peninsula, Hobart n d, p4. The first 18 were: Robert Ashforth, Joseph Armstrong, Joseph Brown, Richard Brissa, Richard

Copperwaite, George Crossland, Jeremiah Crawley (free), William Garrett, William Hornsley, Charles Lea, Crussa Linaphon, Hans Olsen, Joseph Saunders, Richard Somercote, James Taite, Frederick Charles (free), John Taylor, Robert Veitch.

73 Many of these and others identified as being from Birch's Bay have been identified as having also worked at Macquarie Harbour Penal Settlement as specialist timber workers. (Dr Hamish Maxwell-Stewart, Department of History & Classics, University of Tasmania.). One boy arrived with the first group of prisoners sent from Birch's Bay Sawing Station to establish Pt Arthur in the heavy forests of Stewart's Bay on 20 Sept 1830. He was 371P John Parry, formerly a 'plasterer's boy' but now a sawyer. CSO 1/483/10749; 1 Mar 1831 Russell-CSO.

74 CSO1/483/10748, 9 Sep 1830.

75 CSO1/483/10748, 2 Oct 1830.

76 CSO1/483/10748, 21 Oct 1830.

10

Wattle bark in Van Diemen's Land, 1803-1830

Kaye McPherson

Introduction

On 1 March 1805, Lt Governor Collins made an official complaint to Lord Hobart, Secretary of State for War and the Colonies, about the problem of shoes in the new settlement at the Derwent:

> They were of such wretched quality and so ill adapted to the use of the people, who were just landed in an uncleared country, that a pair of shoes were completely worn out in a fortnight, and as it was impossible for them to work in many situations without shoes, the whole having been issued.[1]

The whole two-year supply of English-made shoes provided to the colony had been exhausted. With no option Collins was forced to rely on local resources. His objective was to produce one pair of shoes for each convict. The soles were to be made out of leather bags that had been used to ship wheat from Sydney with kangaroo skins for the uppers. This was the first mention of tanning in the historical record of Van Diemen's Land.

Towards the end of 1805, Collins followed up the above dispatch with another, this time addressed to the Earl of Camden, newly appointed to Hobart's position, following the return of Pitt to power:

> Finding that the bark of the trees called the Blue Gum and Black Wattle of this country, can be used successfully in tanning, I have employed some prisoners conversant in that business; and we get some very good upper leathers from the skins of the kangooroos, but we are not so well furnished with material for sole leather...[2]

The bark of the blue gum and the black wattle were specifically mentioned as the tanning agent. How Collins obtained the knowledge to use these specific barks for tanning is not known. There are three viable hypotheses. The first involves the English background of the convict settlers. Although there were no tanners specifically mentioned among the *Calcutta* convicts, the use of oak bark for tanning hides would have been common knowledge among convicts with rural backgrounds.[3] It is also probable that the thin occupational data obscured the skills of men who may have worked as casual labour in a tannery. Collins, in fact, wrote of employing 'prisoners conversant in that business'. These men could have tried the bark of several locally common trees, fortuitously chancing upon the species that would dominate the Tasmanian tannin bark industry for the next century.

Alternatively, Collins and others in the party had previous colonial experience. By the time of the settlement of the Derwent, a government tannery had been erected at Parramatta and William Goff had established the first private tannery at 8 Pitts Row, Sydney.[4] These tanneries, however, would have been preceded by less formal tanning establishments producing the leather needed by the settlers in New South Wales. Although there is no formal documentation, tanning must have started no later than 1790. At some stage, the fact that the bark of many Australian trees was well adapted to the tanning of leather would have become known. It is conceivable that prior experience in New South Wales guided Collins to the two species used in Van Diemen's Land.

Trial and error by the European colonists may have been the process involved in selecting the barks that had the best tanning properties. Alternatively, knowledge about the use of wattle bark for the tanning of skins could have been obtained from the Aborigines. Ethnographical and anthropological sources note both the use of tanned leather by Aboriginal peoples and the existence of a number of different tanning techniques. One method used to produce skin bags was to use a solution of sap within a closed skin container.[5] Another recorded the skin being stretched over a bark sheath so

that the tannin from the bark was absorbed into the skin.[6] It is probable that Europeans observed these techniques and were guided to the use of particular species by these observations.

My belief is that the transfer was more likely to have occurred in New South Wales than in Van Diemen's Land. David Collins may have even played a role. The Lieutenant Governor has been described as a man 'hungry for knowledge'.[7] His objective was to collect information for a book on the Aboriginal people 'for the benefit of curious Europeans'. For this reason, he developed an understanding of the Eora nation of Port Jackson and established a 'friendship' with Bennillong, who allowed him to watch ceremonies and participate in their preparation. These close dealings with a range of aspects of Aboriginal culture may have given Collins the tannin bark information or method necessary for tanning kangaroo skins.

Thomas Kent and the Huon Distillery

The small population, and the even smaller free population, of Van Diemen's Land before 1820 meant that there was a limited demand for leather products. Wattle bark could be gathered as needed by the tanner from the outskirts of the town or from the bush surrounding the farm. Cottage industries leave virtually no mark in the historical record. The transition, however, to an export industry is reasonably well documented.

The possibility of exporting bark from Australia was first considered in 1802.[8] Convict ships, it was argued, could return to England with a cargo of bark. Trial shipments were actually made in 1804 from New South Wales on the *Glatton* and the *Calcutta*.[9] The reasoning was fairly obvious. A cargo for ships that would otherwise return empty reduced the costs of convict transportation. Other factors that may have played a role were concerns about the declining supply of English bark, and the loss of bark normally imported from Belgium following the renewal of the war with France. No shipments beyond the initial two trials appear to have been made.

The next appearance of tannin bark was again in New South Wales. In 1814, the transported scientist John Hutchison undertook experiments into the chemical properties of eucalyptus and wattle barks on behalf of Governor Macquarie. His results with 'Green wattle (Number 5)' were particularly interesting: the tanning properties being described as 'in abundance perhaps exceeding anything ever sent to Europe'.[10] Searle suggests that green wattle was the contemporary common name in New South Wales, for what is now known as black wattle (*Acacia mearnsii*).[11]

In 1818 Thomas Kent is alleged to have set up an establishment on the Huon River to collect and process tannin bark.[12] The source for the date is not known: it is more likely to be 1819 or 1820. Kent was a long-established colonist having come to Sydney in 1808 and from there to Hobart in 1812. He was involved in many businesses and speculations, not infrequently in conjunction with the Sydney entrepreneur Simeon Lord. Kent was in all probability in a partnership with Simeon Lord, as Lord financed Kent to set up his establishment in Van Diemen's Land, and possibly took over the enterprise when Kent returned temporarily to England.[13]

The historical basis for a date later than 1818 lies in the letter Kent wrote to Governor Sorell on 19 April 1819 to inform him of experiments he had undertaken with products in order to find a substitute for oak in the tanning of leather in Britain.[14] Forests of young oak, he stated, were being cut down for the bark, but the destruction was unable to keep pace with demand. The bark of the mimosa, he thought, would therefore be a profitable export for the Colony.

Kent gave evidence to the Bigge Committee on 6 March 1820 on the wattle bark industry.[15] The evidence is not always easy to follow, either due to problems with the clerical record or with the evidence itself. The location of his works are known only as being 'on the Huon River, about forty miles (64 km) by water from Hobart Town'. Nothing appears on contemporary maps. However, Wattle Grove and Petcheys Bay are two possibilities.

He employed a gang of 14 convicts who were separated into four or five parties to fell and strip the trees. The bark was cut into pieces three feet (0.9 m) long and stacked 'in the same manner as staves for the purposes of preventing it from curling'. He stated explicitly that he exported it as bark. He did not think there would be any advantage in reducing it to a powder, but agreed that its bulk per ton weight meant that it often did not fit into the space allowed on the ship. This resulted in extra freight being charged.

Kent stated that he exported bark due to 'not having been able to obtain the necessary vessels and apparatus for the making of the extract'. He had, however, previously prepared samples of extract and described a process that seems of factory-scale:

> After the bark is collected from the trees, I passed it through a crushing mill for the purpose of bruising it. The mill merely consisted of two wood cylinders placed horizontally and worked by horses. After being crushed, I put the bark into copper vessels and boiled it in water in the proportions of two pounds [0.9 kg] of bark to a gallon [4.5 l] of water; after boiling an hour, that operation is repeated a second time with the same quantity of fresh water; the decoction is then evaporated in pans to the consistency of tar and may be

> continued till it acquires the consistence of pitch...Three tons of bark equals 1 ton of extract, although I use more as the bark is very plentiful.[16]

The production of bark extract was argued to be desirable. The reason was as Kent explained: three tons of bark would be reduced to one ton of extract. This saved space on ships. Firewood was plentiful, infrastructure was minimal. The only apparent negative was the need for casks. While Kent noted that wattle trees made 'excellent hoops and staves', the reality was somewhat different. In Van Diemen's Land, casks and barrels of all sizes were in demand for the oil and skin trades. Most casks were imported as skilled coopers were at a premium.

Wattle Boom, 1824-1826

No records show what happened to Kent's establishment at the Huon River. However, Kent and a partner H.W. Loane, are known to have had a distillery at Birchs Bay in the D'Entrecasteaux Channel from which 'a considerable quantity of the extract of Mimosa bark was made and shipped, in 1821, for the Isle of France'.[17] It was to be forwarded to London if not sold locally. There was apparently no problem in selling the extract at Mauritius. As a site at Birchs Bay would not be in either the Huon River or forty miles from Hobart, it must have been a new venture.

Elsewhere, records show that a significant export trade in wattle bark and tannin extract had developed by the mid 1820s, though the erratic nature of the official statistics contained in the Blue Books of Van Diemen's Land make it impossible to accurately trace its extent. Bark is not mentioned as an export in either 1822 or 1823. The returns, however, for these two years appear systematic and complete. It is mentioned for the first time in 1824, though no value for any item of export was provided. Exports are confirmed by the skimpy shipping data published in the *Hobart Town Gazette*.

It is arguable that significant exports began in 1824, rose in 1825 and probably peaked in 1826. The Blue Book for 1826, however, is very chaotic. Exports apparently ceased in 1827 according to the Blue Book (Figure 1) but newspaper accounts for the same year show that wattle bark and extract was still being listed within cargo manifests of ships leaving for Britain.[18]

In any case, the trade revived in 1828. Despite the lack of official statistics for the next two years, exports apparently continued at a significant level. An export value of £7422 for 1831 was sufficient to place wattle bark

fourth in the list of exports from Van Diemen's Land, albeit a considerable distance behind wool, wheat and whale oil.

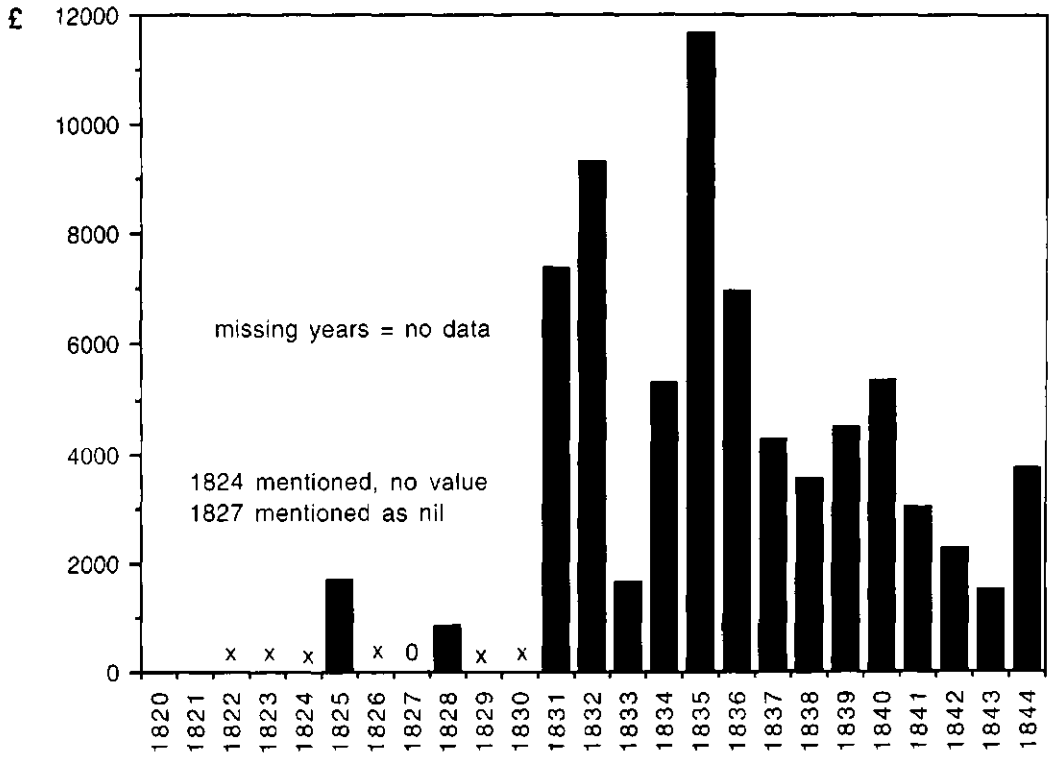

Figure 1: Exports of wattle bark from Van Diemen's Land, 1820-1844

The industry between 1824 and 1826 had some of the attributes of a boom. Wattle bark was being assessed as an industry with considerable potential for the colony. The basis of the argument was the increasing scale of the English tanning industry. This had led to an increase of 25 per cent in the consumption of English oak for tannin.[19] It would be easy for Van Diemen's Land producers to ship into an expanding market. A typical comment was by the editor of the *Hobart Town Gazette* who stated that he had been paying attention to mimosa bark 'as it daily becomes more interesting to the colony as a palatable component of its future opulence'.[20]

Distilleries

The editor went on to call for merchants to enquire of their London agents on the average price difference between extract and dry bark. There was a need to determine whether the extra value of the extract would cover 'the immense toil and expensive apparatus necessary to obtain it'.[21]

Nevertheless the boom years were characterised by the production of extract.

There appears to have been at least three bark distilleries operating in the mid-1820s. These were Petchey and Wood's operations at Petcheys Bay, Peet and Hume's Constantia Distillery at New Town, and something at the Tamar, operator and location unknown. There were probably others. John Petchey, for instance, had a farm near Cambridge from which he stripped all the wattle trees. No record is known of a distillery at this location.[22]

Petchey and Wood established the public profile of the industry by initially shipping 100 tons of extract of mimosa bark to Britain on the *Guildford* in 1824. [23] The bark came from a place near Cygnet now known as Petcheys Bay. The shipment was a triumph. A Liverpool tanner promised to take all the extract that they could export, while H.R.H. the Duke of Sussex formally presented Petchey's agent with the Gold Ceres Medal of the Royal Society for the Encouragement of the Arts, Manufacture and Commerce in a formal ceremony at the Opera House.[24] Upon returning to Van Diemen's Land, Petchey and Wood applied for Crown land concessions at Carlton and Oyster Bay, areas from which they wanted to extract the bark.

Messrs Peet and Hume acquired the Constantia Distillery at New Town probably in late 1825 and converted it into a wattle extract plant operating under the name of the Constantia Extract Manufactory. Their operations are outlined in a letter to Lt. Governor Arthur in May 1826.[25] They stated that they had already shipped 200 hogsheads (57 000 l) to England. This was apparently worth £1400 in the colony, and given the recent installation of 'a larger apparatus', they were planning to produce 300 to 400 hogsheads (86 000–114 000 l) against firm orders and more on their own account. This would be shipped 'in succession by the vessels that load here for Europe'.

The above letter was in the form of a petition to Lieut. Governor Arthur for land on the Hobart waterfront to erect a jetty and warehouse. These were needed to receive incoming shipments of bark, to store the goods they used, instead of money, to pay suppliers of bark, and to eventually handle the outgoing casks of extract. Despite the eloquence of their arguments, Arthur was apparently unimpressed, and the request was not granted.

A third distillery was located in the north. All that is known about this operation is two comments in the *Hobart Town Gazette*. The issue of 18 February 1826 noted the arrival of the schooner *Darling* from Launceston with a cargo that included two hogsheads of mimosa extract. The following issue complimented the settlers of Port Dalrymple for at last paying attention to the merits of extract, whose London price was three times the price of the bark.[26]

In the absence of a Launceston newspaper at this time, further information is unavailable. It may be, however, that this was the same operation which in 1829 was advertising for six labourers to work as bark strippers at Land Fall, a property on the east bank of the Tamar not far from Launceston.[27]

The districts in the south from which wattle bark was being collected can be gauged by periodic notices in the press. A typical example was inserted by William Gellibrand in the *Hobart Town Gazette* of 17 September 1825:

> MIMOSA, OR WATTLE BARK
> TWENTY DOLLARS REWARD
>
> All persons are hereby cautioned against trespassing on any part of the South Arm. Whoever is detected stripping any wattle trees and stealing the bark, will be prosecuted. A reward of Twenty Dollars will be given for such information as shall bring to conviction any person or persons so offending.

Wattle bark had become a commodity worth stealing. South Arm is on the eastern shore of the Derwent. Similar notices appear throughout 1825 and 1826 and can be used to roughly delimit the area from which bark could be collected, although only from private land. Three sites were very close to Hobart: Sandy Bay, Mt Direction and another at South Arm. More were at Pittwater and the Lower Coal Valley including Orielton Park, Richmond Park and the intriguingly named Wattle Bark Hill behind Sorell.

Bust year?

The *Annual Report of the Colony of Van Diemen's Land* for 1827 reports that the export of bark and its extract 'has been entirely abandoned'.[28] This may be an exaggeration. There are shipping records that show exports during the year. For instance, the *Hugh Crawford* sailed from Hobart in March 1827 with a full cargo of colonial products.[29] Listed as part of the cargo were 13 hogsheads (3700 l) of mimosa extract per Mr T. Atkinson, 14 puncheons and 22 hogsheads (12 200 l) of mimosa extract per Mr J. Petchey and 6 hogsheads (1700 l) of mimosa extract by Mr R.W. Fryett. There is even a record that extract was exported to the House of Alexander and Co. in Calcutta by a Mr Jenkins Ferguson, later in the same year.[30]

Nevertheless, the discrepancy cannot hide the fact that there was a collapse of the extract boom. The *Colonial Times* printed a report that 'letters received in the colony note that mimosa bark fetched £25 per ton but the extract was unsaleable'.[31] Nevertheless, shipments continued at a large scale

for a period of time. On 22 September the *Atalanta* sailed with 8 casks of extract and 100 tons of dry bark shipped by Mr Bunster and 24 casks of mimosa extract from Mr James Grant.[32] Bunster forwarded more on the *Henry* in October, shipping out 110 tons of mimosa bark and 30 casks of extract.[33] Prices, however, were disastrous. A large quantity of the bark shipped in September 1826 was reported by the *Colonial Times* in March the following year as having been sold in London at a large loss.[34] As the news was received, shipments would have fallen off, though they did not cease completely.

The problem was the colour of the leather. Fashion decreed that the red colour of the leather tanned with wattle bark was not as desirable as the buff colour produced by oak tannin. Tannin from wattle bark had a number of excellent features. For instance it was both cheaper and tanned more quickly than oak bark. These factors could make a significant reduction to the cost of tanning. However, the statement made a few years later by Mr J. Mitchell that 'colour is of no great importance in leather' is not correct.[35] It is not just 'a mere fancy of the trade'. The English tanners had to meet the requirements of the market. Leather that was too dark or too red would not sell.

It was also probable that much of the Tasmanian product was of an inferior standard. The editor of the *Hobart Town Gazette* in January 1827 could see no reason to abandon the trade despite the recent reports from England that have 'greatly discouraged the collectors of this article'.[36] But he went on to state that producers would need to take more care in producing a quality product, as the main cause of the low prices received in 1826 had been an inferior product:

> Men went into the woods without proper instruments or directions, stripped the trees at random, left the heaps of bark exposed to every vicissitude of weather, brought it into town and threw it in large unsheltered heaps to wait the loading of the vessel.[37]

The rough handling given to the colonial bark was then negatively compared with the methods used in England by villages with generations of experience in the careful collection and processing of bark.

Recovery

Odd things were happening during the year the export industry was in decline. Some were probably due to the lag between the occurrence of events on one side of the world and reactions to these events on the other.

For instance, Mr Beauvais arrived as a passenger on the convict transport *Sir Charles Forbes* on 6 January 1827. His plans were to promote the export of mimosa bark and extract from Van Diemen's Land in conjunction with the company directed by Captain Thomas.[38] This shows that from the time he left England on 15 September the previous year, changes in the perceived economic value of wattle bark had already occurred.

Very little is known about this venture. It was somehow linked with an equally obscure horse-dealing company that was reported by the *Colonial Times* 'to be interested in changing its focus and producing mimosa bark'.[39] The same article noted that Thomas Kent was to return to Van Diemen's Land as the agent. In June 1827 a follow up article discussed the immense contribution Kent had made to the colony's wattle bark industry and how he will be 'coming hither to take the sole management and agency of the firm'.[40]

Letters had been received from Kent stating that he had been granted 10 000 acres (4000 ha) of land (at an unknown location) as a reward for introducing mimosa extract to England. In addition, he was to be given free passage for any workers he might wish to bring out and 100 tons of free freight to the colony on convict transports. Kent cannot refrain from gloating: 'what do you think of mad Tommy Kent now with his boat, casks, and extract down the river'.[41]

At this point, the editor of the *Colonial Times* called upon other settlers to emulate Kent 'to pay attention to the development of the natural resources of the colony'. It is not known, however, if Kent returned at this time to Van Diemen's Land. Searle placed this new venture in New South Wales, and was sceptical about it ever having reached a successful outcome.[42]

Wattle bark re-appeared in the export statistics for 1828. No data exists for 1829 or 1830 but shipments are frequently recorded in the press. Continuous records after 1831 indicate a large, though fluctuating trade. The trade was mainly in bark. Extract is not directly mentioned but it is known that the Constantia Distillery was sold and converted into a brewery.[43]

Conclusion

It has been argued that the average wattle tree produced 80 pounds (36 kg) of bark.[44] Therefore, one ton (1.02 t) of bark would require 28 trees so that a typical shipment of, say, 50 tons (51 t) would involve the destruction of 1400 trees. At first, there was no shortage of trees. Thomas Kent replied positively to a number of queries from Bigge about the abundance of black wattle in Van Diemen's Land. It was, he confirmed, found 'all over the

country' and would spring up in any area of cleared land if not kept constantly in check.[45]

There were, however, two flaws in his argument. Firstly, the wattle had to be accessible to water transport. It was uneconomic to move the bark over any distance on land. In New South Wales, Bigge had been told that the carting of bark was uneconomic with a rate of £3 per 30 miles (48 km).[46] Locally, there is no evidence whatsoever of carting in the forest. Bark would have been carried on the backs of men either to a bush distillery or a shipping point. If a man was to harvest half a ton per day, then the distance over which it could be carried would be very limited.

Secondly, Kent also argued that 'the bark of the old trees affords the greatest quantity of tan, and it is from them that I collect the bark'.[47] Interestingly, Kent also claimed that he used three tons of bark to produce one ton of extract. Mitchell, writing in 1850, claimed that it took 9 tons of wattle bark to make 1 ton of extract.[48] The difference is intriguing. One feasible reason for the increase in the ratio is that the large tannin-rich trees were no longer available. Thirty years of exploitation had probably altered the structure of the forest in areas that were accessible to wattle bark strippers.

Kent described the nature of the wattle forest in the lower Huon Valley when asked the question:

> Do you find the mimosa trees standing near together or much separated?

Kent responded:

> At the Huon River, they grow on the sides and tops of the hills in groves, and from 5 to 20 yards [5-20 m] asunder.

He also noted that these were very large trees:

> from eight inches [20 cm] in diameter to 30 inches [76 cm] in diameter at the butt and in length from 40 to 100 feet [12-30 m] and perfectly straight. [49]

Kent's description is not of a natural forest, but of a forest created by millennia of Aboriginal land management.

The black wattle plant was of great utility for the Aboriginal Tasmanians, having many importances to their lifestyle, not only for its bark for tanning. The seeds, high in protein, were roasted green and eaten as a vegetable, or ground into a flour when ripe. The blossom, which had ceremonial uses, was also steeped in water for its nectar, or hung in bunches inside their houses. It was a multipurpose tree cultivated for their attractiveness to witchetty grubs, birds and animals. It was part of a cultural land management process to encourage the wattle, thus producing a distinctive

landscape varying from tall, straight widely spaced trees, called groves by Kent, to the more dense copses of trees of varying ages. An additional purpose of the wattle was to act as shelter belts for the kangaroo and other grassland animals.

Wattle as a plant had culturally defined annual events for thousands of years. The Tasmanian Aboriginal name for what the Europeans termed as spring was Pawenya Peena, the time of the wattle flowering.[50] So strong was the fragrance of the wattle that it could be smelt over considerable distances and the fragrance was an integral atmospheric part of the pre-invasion landscape.[51]

The wattle copses began to diminish in places close to colonial settlement, with the wattle bark industry carelessly destroying the plants. Thus irreversible changes to the Aboriginal landscape began to occur. As the wattle copses and groves began to diminish in places close to colonial settlement and on the coast, so too the fragrance. Never again were the wattles to be such an integral part of the environment. With the renaming of the tree to wattle the last link to the Aboriginal past was gone; losing for ever the Pawenya Peena season of its flowering.

Notes

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4 Searle, S. 1991. *The rise and demise of the black wattle industry in Australia.* Canberra: CSIRO Forestry (Technical Paper No 1), p. 3.

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9 *Historical Records of Australia,* Series 1, vol. 5: King to Hobart, 20 December 1804, p. 205.

10 *Historical Records of Australia,* Series 1, vol. 8: Hutchison to Macquarie, 31 March 1814, p. 223.

11 Searle, S. 1991. op. cit.

12 *Australian Dictionary of Biography* 1967. vol. 2, *1788-1850,* Thomas Kent. Melbourne University Press, pp. 44-46.

13 *Historical Records of Australia,* Series 3, vol. 3: Kent to Bigge, 20 October 1819, p. 639.

14 *Historical Records of Australia,* Series 3, vol. 3: Kent to Sorell, 19 April 1819, p. 639.

15 *Historical Records of Australia,* Series 3, vol. 3: The Bigge Report Examination No. 16 of Thomas Kent, 6 March 1820, pp. 255-7.

16 *Historical Records of Australia,* Series 3, vol. 3: The Bigge Report Examination No. 16 of Thomas Kent, 6 March 1820, p. 256.

17 *Hobart Town Gazette,* 17 December 1825.

18 *Colonial Times.* 23 March 1827

19 *Hobart Town Gazette,* 28 June 1823.

20 *Hobart Town Gazette,* 8 April 1825.

21 *Hobart Town Gazette,* 8 April 1825.

22 Pers. comm. Freda Gray, President and historian for the First Settlers (1804) Association, and living on Petchey's farm.

23 Read, C. 1992. *John Petchey: Handsome John,* New Town: Van Diemen's Land Norfolk Island Interest Group, pp. 4-5. The source states extract, but it is more likely to have been bark given the tonnages quoted.

24 *Colonial Times,* 30 September 1825.

25 LSD1/66/296, Peet and Hume to Arthur, 3 May 1826.

26 *Hobart Town Gazette,* 25 February 1826.

27 *Cornwall Press and Commercial Advertiser,* 17 February 1829.

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31 *Colonial Times,* 15 September 1826.

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11

Life in a lost Tasmanian rainforest, winter 1827

Brian Rollins

Winter, as some Tasmanians will tell you, is a season spent in anticipation of the next—a season when the months of darkness prevail, with weeks of wind and wet, when days outdoors foster fond thoughts of cosy evenings indoors. However, on the northwest coast of Van Diemen's Land in the winter of 1827, a group of men found that a life toiling under the forest canopy had no such compensations.

With the passage of 175 years winters have come and gone, and perhaps changed a little, but the fortunes of the forest have suffered irreversibly. Long gone is the 100 metre deep verdure which once clothed the north-west coast like a blanket, and which the Surveyor General of the colony described in 1829 as being 'the most stupendous and tangled forest in Van Diemen's Land'.[1] The first European interlopers of 1827 were members of a survey party, servants of the recently established Van Diemen's Land Company, who were cutting a track through to grazing lands thirty kilometres inland.

Cut southwards from the shore of Emu Bay in Bass Strait, the track was heading for a feature named in 1798 by Matthew Flinders as 'Peak like a Volcano'. The first non-Aboriginal to approach it from land was the chief surveyor and architect of the Van Diemen's Land Company, Henry Hellyer. Climbing it on 15 Feb 1827 he renamed it 'St Valentines Peak' for the preceding day. From its summit he discovered a considerable tract of

grassland and open eucalypt woodland which he named the Hampshire and Surrey Hills.

The track to 'the Hills' was no more than a tunnel five to six metres wide, cut through the tall timber and dense understorey. Without road metal its travelling surface was no better than a skid pan and this quickly degenerated into a deep muddy channel when ultimately subjected to wheeled vehicles and mass traffic of sheep and cattle due to the 'poachy' nature of the rich volcanic soil upon which the forest luxuriated.

It was in this environment in the winter of 1827 that the eight-man survey party must have wondered why fate had been so unkind to them as to cast them in the role of road builders. The record of their daily life from 3rd July to 29th August is contained in the last of three surviving diaries written by the party leader, Hellyer, one of the early colony's foremost explorers. The party consisted of one free man, Richard Frederick, and six assigned convict servants.

This paper is an account of one man's observations of a life shared with the age-old forest. Hellyer had only been in the Colony a year and a quarter, much of this time having been occupied in exploration.

In 1827 the only means of access to Emu Bay was by sea and the only Van Diemen's Land Company settlement at Circular Head, now Stanley, was 63 kilometres westward. Access to George Town and Launceston, the nearest towns to the east on the Tamar River, was also restricted to Bass Strait. With favourable winds and conditions access to these nearest settlements, and supply from them, might be achieved in one long day but with contrary winds a simple communication might take two weeks to effect.

The working day was from daybreak to dusk, 6 days a week, 52 weeks of the year. Furthermore, the Sabbath spent in the forest was not often spent in recreation. Their daily work was carried out only with hand tools and sometimes fire, but without animals or carts. Fire was difficult to obtain by striking flint on steel as the sparks do not readily take hold in a damp environment.

Van Diemen's Land at the time was a penal colony. However, none of the Van Diemen's Land Company convicts, including the six prisoners in Hellyer's gang, were shackled by day or secured by night. Moreover, they had access to firearms and hence had the potential to abscond at any time. Presumably the threat of punishment upon capture, should they survive the wilderness to be captured, was sufficient motivation not to abscond in the first place.

By late June of 1827, seven weeks after first setting up camp and a depot at the mouth of the Emu River, Hellyer's party had cut their track four

kilometres inland to the deep valley of Cascade Creek. It was at the banks of Cascade Creek that Hellyer's diary begins on 3rd July 1827.

The diary commences with what may be unique in early colonial forest history—an eight page assessment of the quantity of timber upon three equal quarter acre plots of land adjoining the road (summarised in Table 1).

Table 1: Number of trees on a quarter acre, average of 3 plots.

	Diameter		Number
Trees	2–4	inches	144
	4–8		182
	8–12		78
	1–2	feet	14
	2–4		8
	4–7		6
	7–10		1
	over 10		1
Logs	2–12	inches	93
	1–4	feet	13
	4–10		4
	over 10		1.3
Tree ferns			21

Note: A quarter acre = 0.1 ha; 1 inch = 2.5 cm; 1 foot = 0.30 m.

To supplement Hellyer's quantitative assessment the following account by his boss, Edward Curr, upon first encountering the forest three months later adds substance to that mass of phantom trunks.

> The first eight miles of road lies through a forest altogether unlike any thing I have seen in the Island. The Myrtle tree scarcely known except in this district and enormous Stringy Bark Trees many of them three hundred feet high and thirty feet in circumference near the roots exclude the rays of the Sun and in the gloom which their shade creates those trees flourish which affect darkness and humidity, and in other parts of the Colony are only found in the deepest ravines and by the sides of creeks, [are] sassafras, dogwood, pepper trees, musk trees, and, in some situations blackwood of the best quality. The forest trees and under growth described which latter rise to the height of from eighty to one hundred feet create and retain on the ground such a great degree of humidity and almost dungeon darkness that all the tribes of cryptogamous plants flourish there to a degree that I never observed in any other situation; fungi, mosses, lichens, ferns. The most remarkable of these plants, the fern tree, which has precisely the

> form of the cocoa nut tree, with a stem often seven feet in circumference near the ground gradually increasing in girth towards the top, grows to the height of thirty five feet. Every trunk, stem, root and branch, of every kind of tree, is closely invested with a thick coat of moss, this moss again becomes the receptacle of the roots of parasitical plants, as well as of other, not generally parasitical, and these in their turn nourish their share of the moss and ferns which latter often invests the trunks of the fern trees to their summits, and of the forest trees to the height of near one hundred feet from the ground. If to this enormous mass of vegetation be added another whole forest of fallen timber strewed thickly in every part and which occasionally lies in heaps to the height of twenty and thirty feet from the ground some idea may be formed of the difficulty of penetrating such a country and opening roads...[2]

In returning to Hellyer's diary it is necessary to bear in mind that he had spent the best part of two months working in the forest before commencing this, the seventh diary. Therefore we are unable to share his vital first impressions of the forest itself. However this diary is quite descriptive of man's life spent semi-permanently under the canopy. The 69 page octavo diary spans 58 days and rather than attempt to interpret and summarise living conditions, I leave it to Hellyer to tell his own story through the following extracts.[3] His comparatively comfortable camp set amongst the coastal boobyalla was about to be foresaken for another.

Wed 4 July

> The night has been very cold—there is not a cloud to be seen this Morning—the Sun has great power when the weather is thus clear and soon after he has risen the air begins to feel a degree of warmth which renders this situation pleasant even in the Winter. In splitting a Log this Morning there came out either a large mouse or a young Rat. It appeared either in a dormant state or it was injured in some way as it remained very quietly in my hand while I sketched it off...
>
> The Men went away as soon as they were prepared for work and were employed all this day in completing the Huts beyond the Cascade Creek. They found plenty of Bark for the purpose and have now got all ready except putting up some Bark Slabs upon Logs to enable them to sleep a little off the ground. It is the best spot we could fix on but it is a dismal place compared with this. I intend however to remove my Tent there also and such of our articles as we cannot take with us I will have buried inside the Hut here and leave a Notice that we are to be found on the Road &c...

This has been a very fine day, a brilliant Sunshine from its rising to its setting and certainly we have no winter weather in England to compare with it...

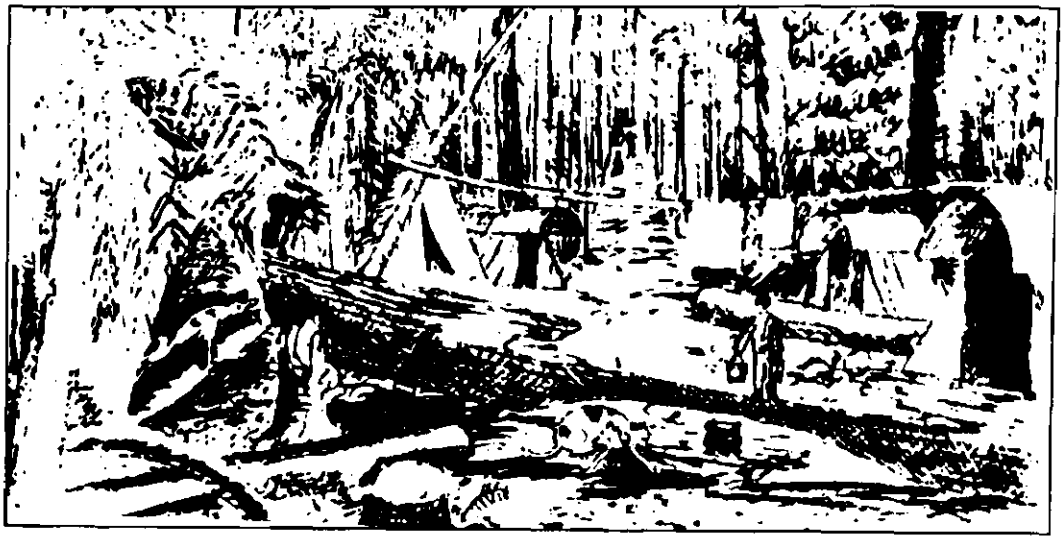

Figure 1: Camp in forest, 10 July 1827
Source: Hellyer diary

Thursday 5 July

...Before cutting down the Banks to go over the Cascade Creek I wished to see if that labor could be saved. I therefore went up with the Road party this Morning with the view of examining the Country ahead from S by W to SW. I saw the little Huts they had put up—merely Slabs of Bark put on end—each Hut will serve 2 men and in front they will have their fire. Left the Men at work upon their Huts and took Fred'k with me. I went first in a SSW direct'n to see the kind of Road we should have by continuing that line and going up the first Hill beyond the Creek we came to the largest Log or Trunk of a Tree that I have seen since I have been in the Country—it measures 192 feet [58.5 m] now and has lost all the upper part which must have broken off in falling and as that part is 3ft 6 [1.1 m] thro' it is fair to imagine it must have been from 80 to 100 feet [24-30 m] higher—it is a White Gum Tree and straight as an arrow. After this who will doubt there are Trees in this Island 300 feet [91 m] high. Imagine the Monument on Fish St. Hill [this is the 62 metre high doric column, the Monument to the Great Fire of London of 1666, which stands near to London Bridge] with large limbs and branches 100 feet above the top of that noble Column and that will give you some idea of these enormous Trees—this Tree measures 36 feet [11 m] in circumference at the butt end and contains without the head 6348 Cubic Feet of Timber—more than 126 Loads [180 cu m]. The Lower

end of the Tree is so wide and smooth a Cart and Team of Bullock[s] could be taken along it 30 or 40 yards [30-40 m]. Such a Tree as this would make a fine Bridge and it would only require posts & rails on each side to make it complete. Found the Forest on the upper part of this Hill open and Ferny with abundance of Sting nettles. The soil is as rich as could be desired and here are some of the finest Blackwood I have ever seen. The Fern was very wet and matted together with a very powerful climbing Plant which hung in festoons from every Tree and netted and embowered all the smaller Trees and we were so entangled in it that we could not have got through if we had not had a Tomahawk with us to cut our way. I cut off a piece of this Climber which I have sketched upon the blotting paper. There is a leaf and a small shoot at every 10 or 12 Inches—I measured the circumference of a Stringybark Tree on this Hill—31 feet! [9.4 m] at 5 feet [1.5 m] from the Ground—it did not seem in the least decayed. Descended the 3 Mile Hill and crossed a deep Valley of Ferntrees and Fern 10 feet [3 m] high through which we waded in the pouring rain and it seemed to have set in for a wet day but as we were already wet through it was of no use to flinch. This high fern is very troublesome to get through as it conceals all the dead wood and we were thrown down by it at almost every step...

Saturday 7 July

...All hands busy removing Provisions & Luggage from the Shore up to the Huts on 3 Mile Hill. The rain of last night had made the ground very slippery and difficult for walking on with heavy loads so that they could only make 2 trips in the course of the day. Therefore we were obliged to leave my Tent and all the Bedding of the Men &c to be carried up on Monday...

The weather has been fine all day and there is a brilliant Moon tonight—some of the Men took the Dogs out by the moonlight and were hunting upon the open places along the Shore westward until midnight but had no success.

I expected to have seen the Whale Boat and was busy till late writing in case she should be going to Launceston that I might send to Mr Curr.

Sunday 8 July

A fine clear Morning like Summer in England except a little keen air from SW.

The Men all busy washing up everything preparatory to their going inland.

I hope the Whale Boat will arrive tonight for we have not sugar for 3 days longer and to be without that comfort while we are living entirely on salt meat will be a great privation. The Men are all complaining of breaking out and requiring Medicine. I have distributed all the Epsom S't. I was provided with—if the Whale Boat does not arrive by Tuesday next I must send off my little Boat...

Monday 9 July

Fine Morning and the Sea is smooth as satin with now and then a grand Wave upon the Shore—a gentle breeze from the SW.

The Men have been occupied the whole day in carrying the remainder of the Provisions, Luggage, Tent, Tools, Utensils, Firearms, &c up the Road—I struck the tent and after leaving the following nailed up inside the Hut viz. 'All removed to the new Camp about 3 Miles up the Road'. I took my Knapsack, Pistols, Telescope with the Tent pole and some other articles and followed the party to the New Camp where we all arrived (the Men having made two trips with heavy loads) just in time to get the Tent pitched & a fire made before dark. The Ground here is so damp and wet at this season we have been obliged to contrive a sort of Sleeping place by putting a Slab of Bark upon Logs which I expect will be very hard to lie on without either a Mattress or Fernleaves. I would not bring a Mattress with me because the Men should not think I was better off than themselves & because of the trouble of carrying it about.

It has occupied all the Men two whole days removing and thus the time which should be occupied in road-making is in part consumed and it is carried on in such a spiritless way the Men have no heart to do anything and they have no change of food from one week's end to another. If I had my will respecting this important opening through the Forest I would give all the Men an allowance of Spirits as a necessary comfort while they are obliged to live in this uncomfortable manner and I informed Mr. Adey they were not sufficient for the undertaking. He promised there should be more Men sent which I hope he will not neglect to do.

This afternoon has been cloudy & likely for rain but it held off till after dark.

This is a horrid place [to] be [living] in, neither Sun nor Moon to be seen, no part of the sky [visible] being completely darkened by dripping Evergreens consisting of Myrtle, Sassafras, Ferntrees,

immensely tall White Gum and Stringy-bark Trees from 200 to 300 feet [61–91 m] high and heaps of those which have fallen lying rotting one over the other from 10 to 20 feet [3–6 m]high and with all this load here are Dogwood & Musk trees filling up every vacant space so that the smoke will not rise from the Ground in cloudy weather and what with that and the Steam from the Large Wet Trunks (we are trying to make our fire against) we are just in the situation of being either Suffocated, buried alive, knocked on the head by falling Trees or being killed by the damp and cold for want of a Fire. I don't know how we shall get on—the work has gone on but slowly lately—the Men are weak and soon tire.

The Even'g is as fine for Ducks as ever was seen and the Ground already ankle deep in Mud and so slippery there is no standing upon it.

Tuesday 10 July

All the Men complained of having had no sleep. In fact we were no sooner quiet than swarms of Rats paid us a visit and ran all over us nibbling anything they took a fancy for & the Hyenas & Pole Cats kept the Dogs barking all night. Opossums were screaming at intervals so that we all got up as tired as when we went to bed. The hard bark slabs made my bones ache intolerably & I was afraid to put any of this wet fern under me but I must get some dry fern as soon as I can...

Wednesday 11 July

It has rained incessantly the whole night and we are all in mire and puddles this Morn'g.

We were all alarmed by a fall of a Tree in the middle of the night which came down within 2 yards of Frederick's Hut and knocked down the Pole we had set up for a Horse to dry clothes upon close to the fire. The Dogs barked and we called out to know if anybody had been hurt but it had done us no mischief.

This Morning the weather is mild and we can just perceive the rays of the Sun streaming through the foliage which is dropping with rain. These glisten as they fall and may be thought to have a pretty appearance but the effect is rather chilling than otherwise...

I measured the length of the a dead Tree which lies partly in our Road. The top of it has been scattered in the fall & rotted, its top having broken off at 2 feet [60 cm] diam'r the remaining Log measures 240 feet [73.2 m] in length! I also measured 2 immense Trees just above the Huts which grew within a yard of each other. These have fallen within the last week and carried destruction to the

extent of knocking down about 100 other Trees and another immense Tree which grew below them quite as large as themselves. Each of these are 180 feet [54.9 m] long without their heads which are broken into slivers so that I cannot tell how much higher they were when standing, but the diameter of that part where the head is broken off is nearly 3 feet—it is well for us we had not pitched our Tents in the way of these Trees. The Soil of this Hill is most luxuriant and well worth the clearing.

The wind appears to come from NW by our smoke. We have managed to get a tolerable fire tonight which we much required.

Thursday 12 July

The night has been dry but very cold and we were much infested by the troublesome Rats. They appear to be fondest of Leather and unless we take some method of keeping our Boots out of the way we shall not have any to wear soon.

Our gloomy situation is enlivened somewhat by a few rays of the Sun this Morning which leads us to hope we shall have a fine day again. There seems a breeze from Eastward by our fire and smoke. I determined today to complete the Road at the Cascade Creek and all the men did their utmost to accomplish the task. I took some of them with Spades and Pickaxes to cut the sloping Roads down the banks and Fred'k with the other men made the Bridge of Logs upon which sufficient earth was afterwards thrown to make the Road across the creek. We had just light enough to see to finish it. I assisted them the whole day and kept them hard at work by my example after which I had a better appetite for fat pork than I usually have...

The Road is now complete as far as this Encampment and by way of encouragement I gave all the Men a little of the small stock of Sp'ts which Mr Adey had the politeness to send me 3 weeks ago viz. 2 Bottles which I have hitherto kept in case of illness or necessity but this is not the way in which the Directors wished me to be treated and I am not at all pleased at it not that I ever care to touch Sp'ts except when very cold or wet, but it is so illiberal that it deserves to be commented on—the 5 Gallons of Wine was very poor & tasteless to hard working men. I gave the Men about 1¾ Pint [1 litre] every night as long as it lasted of which each had his share—there can be no distinction made among men so situated in regard to eating & drinking. Our Tea is made in the kettle, our bread is baked in the sand or ashes and is here called a "Damper"—it is merely a cake of Dough and never twice alike & we all partake of it without distinction. Indeed under the circumstances it cannot be otherwise and I am contented

with it as long as I have my health which has been but indifferent lately because there is no change of meat. The weather has been fine overhead all day, but it is now raining a little.

Friday 13 July

There was a high wind in the night which made some of us tremble—Fred'k says it was only a land breeze. The Sun appears to be shining this Morning and as it is dry overhead it promises to be fine & I hope to be able to extend the road beyond our Camp a few Rods today. Mackie caught one of the Black Rats in the night in a trap he had contrived. That described by me on the 4th. instant was a young one of the same description as this, except that the fur of this is nearly black—this Rat measures 11 Inches long from tip of nose to end of tail; the tail is 6 Inches long, large naked Ears, long whiskers, and a pouch like the Opossum and Kangaroo...

We also found the Sassafras Tree in full bloom. The Sassafras is of very large growth throughout the Green or Myrtle Forest. It seems to be partial to the shade and under the branches of the tall Trees it is usually found—there are some upon this Hill from 2 feet to 3 feet [60-90 cm] through. The whole of the tree has a medicinal scent wh[ich] is well known. I have seen 2 sorts in this Island; one with plain leaves, and the other serated [sic] similar to the Sketch on the opposite side. The flowers hang drooping under the leaves; the Calyx consists of 4 silky leaves of a cream colour, the Corolla of 6 White petals of tender consistence—and we met with another kind of Creeper which we had a great deal of trouble to get rid of. It grows so profusely that it completely binds the trees together and the Men were obliged often to fall 5 or 6 trees to remove one which stood in our way, after hauling away at the festoons and ropes until there was no avoiding it. I have sketched the leaves and end of a branch of this Creeper on the opposite side.

It is very cold tonight. There is a chilling raw air through the Forest and we have great difficulty in making a fire of the damp wood we find here.

I informed Fred'k if the whale boat does not come by tomorrow he must go to Circular Hd on Sunday for Supplies if the weather is fine.

Sunday 15 July

Fine dry Morning—the Men busy washing—I have hitherto rested so uncomfortably since removing to this spot that I determined to build myself a better bed place as it is on the Slope I put up some Posts &

Rails at the foot to keep me from sliding out clean down the Hill which has been the case every night yet.

Made a little Sketch of this Camp in the open space I had left for that purpose vide Tuesday 10th inst. Busy writing & did not leave the Camp all day...

Had a large Fire made up to dry the Men's Blankets &c which had imbibed so much dampness they were quite dangerous to sleep in and all the men complained of sleeping very cold. I am a little better off having provided myself with 2yds. of Floor Cloth before I left Cowes which prevents the Sap in the Bark & the dampness from the Ground from getting at my Bedding. But who would think of reposing upon Floor cloth in England which Medical men reckon dangerous even to put the feet upon.

Harley shot a Crow which he wounded no farther than depriving it of its long wing feathers and brought it up alive intending to place it as a Guard over our provisions from the Rats.

I hope this dry weather will continue for sometime—it is quite a relief as we had never been 3 days without rain for a long time before.

Monday 16 July

...Corvus proved to be a good watchman and effectually kept away the Rats but it was chiefly by his excessive liberality in bestowing upon every one a peck.

Took the Men up the Hill to go on with their work, they all worked well and I assisted them in rolling away the heavy Logs after they had cross cut them. There was one which required extraordinary preparation to remove it—we were obliged to place skids stripped of the bark for it to slide upon and conquer'd it at last. There was another which was of immense size, nearly 15 feet [4.5 m] through, which appeared nearly rotten but it proved to be a tough job to get rid of it. We afterwards extended the line of Road and found the Hill more open having no trees for several yards together but exceedingly high Fern from 8 to 10 feet, bound together by strong creepers & very difficult to force a passage through without cutting it down. There was a large animal of a grey colour went across the Road—it was not a Hyena, but appeared as large as a calf and made a great noise when it plunged into the Bush. We tried to find where it went to but soon lost trace of it. I wished we had had a Gun ready at the time. I think it must have been a very large Hyena—I know of no other animal that it could have been...

Thursday 19 July

> It has rained nearly all night and we are all in a fog this morning and mizzling rain. The Crow has escaped from his Prison & the men have been searching for him every where & threaten to double-iron him if they can find him. The Men are preparing their axes for work & I have directed Harley to carry up a Firestick to try & burn a heap of Timber consisting of 3 immense Trunks which have smashed upon each other just in our way forming a Pile about 14 feet [4.3 m] high & nearly 100 feet to the right & left [of] our route so that we must go through it by fire or steel.
>
> Took the Men to their work and made a fire in the heap of dead Trunks which we allowed to burn as it would, and merely attended to it to keep it up, and as it was protected from the rain by the upper timbers, it ans'd our purpose very well. They, in the mean time, were employ'd in falling trees & clearing away such other obstacles as stood in our way and by the Eve'g they had extended the line of road a good distance beyond the burning Logs. It has rained the whole day a kind of thick mist with heavy showers at intervals but there was no retreating. I found another Climbing Plant today which I have sketched. This is the only one which is commonly found in other parts—at least it is the only one that I had found until I came to this Hill, which might with propriety be named 'Climbers Hill'. I went on ahead a good way today to inspect the ground we have for travelling upon and marked the Trees after going some distance to the right & left of our course to find the least possible labour & the nearest route at the same time. We made up the Fire and left it burning at a great rate the full width of our road altho' it rained and when we got back to the Camp we found it all in a puddle & having no Candle or light I just ate a little salt pork & a 'doughboy' i.e. a pudding made of flour & water boiled hard & drank a cup of cold water & as we could not have our clothes dried I went to bed about ½ p 6. It continued raining all the Ev'g.

For breakfast two days later the men had not a morsel of meat of any kind remaining, and all they had to supplement their dry damper was sugar-less tea. That same day though the whaleboat did eventually arrive to replenish their supplies and Hellyer had the good fortune to be recalled to Circular Head, quite literally for a matter of housekeeping, while his men remained behind in the forest. At least his rank did entitle him to the odd privilege. One week later, however, his first day back under the canopy quickly reintroduced him to the 'pleasures' of bush life. Winter, along with its awful infant the 'roaring forties', had by now nearly fully set in. This fact

Hellyer acknowledged on August 1st: 'The Rainy Season usually commences at this time. I therefore expect we shall be as wretched as we can be for the next 2 months'.

Sunday 29 July

Heavy rain nearly all night and still continues. Heard distant Thunder frequently this Morn'g the first time for some months that I recollect to have heard Thunder.

Miserable abode this in the Gully—so dark I cannot see in the Tent without a Candle at Midday. My Tent is now like a damp Cellar—everything in it is mouldy & the Canvas is covered with circular spots of Mildew, some white & some green, from one inch to 12 Inches diam'r. I must endeavour to get out of this abyss as soon as possible. The Canvas has never been dry here for an hour—the Fire is obliged to be made so far from the Tent it is of no service in drying it. I brought with me some raisins & the Cook is trying to make a Pudding to vary the food a little. Fred'k went ahead to examine the ground for a spot to remove to—it has rained nearly all day. There is not a moment's comfort in this horrid gully, I cannot get warm without taking an axe and working like a slave at cutting wood to burn, or some other hard work. It continued raining so hard Wells & Jones remained at the Depot all night.

Monday 30 July

It has rained all night & is streaming about us in every direct'n.—there is however a cessation of hostilities this morn'g—had a large fire made & put out articles to dry before it—Higginson mending the Men's Shoes. Jones & Wells came up to Breakfast, they had tried to wade the Creek last night but it was too deep & they returned to the Hut.

Went up with the Road's Men and made great use of my Tomahawk in cutting away small-stuff—they are now about a Mile beyond this Encampment in a Forest of small Dogwood with noble SB's & WG's.

Dreadfully wet Ev'g—it commenced again about ½ p 2 & drove all the people back to their quarters—there was no standing such weather.

Tuesday 31 July

Wells, very ill & unable to go to work.

Very squally & rainy morn'g. A fall of trees in the Road only 50 yds [50 m] from our Huts. Unwell myself & obliged to resort to Physic.

Wells said he caught a cold on Sunday night from hav'g no means of drying his clothes.

Higginson cobbling. Only 4 Men able to go to work & they ret'd about ½ p 1 o'clock all wet thro'. Very miserable weather this—blowing a hurricane—We shall be lucky if we all escape from the falling of Trees and Limbs. A dreadful crash across the Gully—an immense Gum tree fell headlong into the Creek below us; rolling, cracking and crashing down every stick that stood in its way. Very cold & wet Ev'g. Impossible to keep a fire in—obliged to lie down in my clothes & cover myself with a p'ce of oil cloth—the rain comes thro' the tent at every lodgment where the mildew has accumulated.

Thursday 2 August

It has rained all night. We are in a horrid pickle—all covered with mud up to the Eyes—the surface is saturated and the Rivers must rise. Set Jones scraping away the mud & letting off the puddles—he s'd it reminded him of the people in Blackfriar's Road where he wished he was now.

It rained all this Morn'g till about 11 o'clock when the men went off to work to open the New Camp Scite [*sic*].

Wells recovered a little—Higginson cobbling. The Men all driven back about ½ p 2—shocking weather—no hopes of its leaving us for some time. They all collected firewood and made 2 large fires during a lucid interval just before dark.

It is impossible to look at any papers or to try to write in such a place as this.

Monday 6 August

Squally morn'g. Fred'k. started off at daybreak to remove the boat at top of high w'r. to a good spot for hauling her up and to repair & paint her. Sent away 4 other men to help Fred'k. & to bring up Potatoes from the Shore &c.

We are running very short of Meat—I don't think we have enough to last more than a fortnight. Higginson bringing Flour from last Camp.

No work done today at the Road—there is a great waste of time removing our various articles—a Horse or even a Donkey would be a great assistance to us. How shall we get provisions some miles further in I am at a loss to imagine.

It rains every day now—St. Swithens in England is a trifle to such a Wet season as this is...

Tuesday 7 Augugust

Wet & Stormy Morn'g. Wind NW.

The Men went to work again at the Road (for the 1st time since the 1st inst.) and were very busy clearing away Logs when they discovered a tree falling and had no sooner got clear out of its way & returned to remove it when they observed a huge dead Limb coming twirling & twisting down from an immense height & it fell so close to them that it broke the handle of a Spade which Higginson had just been at work with & would have killed some of them if they had not removed in time. It was quite wonderful that they saw it coming. In fact we had quite a hurricane about noon—I could not sit to write for the smoke & the wet & the trees were cracking in all directions. Writing sundry Memoranda in this book until rain poured upon me so much I was obliged to relinquish it & put on a great Coat in the weather beaten canopy.

All the Men driven back about ½ past 1. I had some thoughts of bringing some Drawing Paper with me to make a large Map of the intended Harbour here but I knew there would be no convenience for using it during this rainy season—in fact it is not weather for neatness or for using anything liable to be spoiled by the rain...

Wednesday 8 August

...The afternoon was overcast and it rained so heavily about 2 o'clock it drove all the Men in, but I got them all out again as soon as the rain ceased & they concluded the day with removing all the Logs which had been crosscut.

Our supply of Meat grows very scanty—the men are so dainty they refused to eat the Mutton which had been salted. I therefore had some of the Pork & Beef (we have only 4 pieces of each left) put into my Tent until the Mutton is gone. I have been eating the Salt Mutton for some time and wondered that the mutton should last so long, when it appeared at last that none of them would eat "pickled Mutton" but myself & the Dogs. The is a 'Morepork' now screaming, which is so extremely touching to the feelings of the men I could not imagine at first why they were calling out 'go and tell Mr. Adey of it' in reply to this Bird's screaming 'Morepork', but the Owl tired them out...

Thursday 9 August

We have had a very stormy night and heavy rain nearly all night. I was kept awake until nearly daybreak and expected every moment to be

> knocked on the head by some of the falling limbs and branches which were continually cracking about us and ever and anon some gigantic trunk was heard measuring its awful length upon the earth which fairly shook by the rocking of those larger Trees about us under which we had been obliged to encamp and take our chance of all that might befall us...
>
> ...Very squally day—at intervals it blew so hard we were afraid to be near any of the dangerous old Trees.

Monday 13 August

> A dreadfully wet night again...it has penetrated every place. I take hold of nothing but find it wet and the dampness that accompanies it makes the Tent extremely cold & uncomfortable. They have been trying for sometime to make a fire but at present there is more smoke than fire—they are obliged to pile on so much wood to prevent the rain from extinguishing it. It will be sometime ere the kettle boils this Morning as it now continues raining heavily...

Hellyer's diary went on to conclude sixteen days later in the pouring rain of 29th August 1827. The fate of the subsequent diary and that of possibly thirty others chronicling his six years in the field is uncertain—only three are known to survive. However his next four years were spent in exploration, settlement and mapping of the VDL Company's extensive properties, many relics of which remain to this day, but that is entirely another story.[4]

To everything there is a season, but both Hellyer and the forest met their end long before nature intended.

Hellyer, despite the dangerous, demoralising and depressive environment of life in the forest is someone who never quite succumbed to misfortune nor to self pity, who continued to marvel at the wealth of insect, animal, and plant life about him—a born field naturalist who retained that spirit of adventure evident in his first diary. It is so ironic that only five years later when living at Circular Head, for the first time in his colonial life leading a sheltered, comfortable and sedentary lifestyle with a roof permanently over his head, that the spirit of adventure and spark of life within him was to falter and die, extinguished by his own hand.

And what of the forest? Those same seeds of destruction that Hellyer introduced in 1827 took several decades more before their cancerous growth ultimately proved fatal and the forest was consigned to its place in history. By the time pioneering families had set about converting forest to farmland, that seemingly infinite and all enveloping forest proved only to be finite afterall.

Standing at the same spot where Hellyer drew his campsite sketch 175 years ago this July, contented cattle graze on undulating paddocks, blissfully unaware of events so long ago. Even their farming masters would detect no evidence of the vanished forest, or of man's forgotten presence in it, as this section of road that Hellyer and his men toiled to open was abandoned after only one year's use. Nevertheless to the informed observer it is cause for reflection that at this place, in the winter of 1827, men communed with nature and experienced a majesty and a misery that today, given the passage of time and lifestyles, is difficult to truly comprehend.

Acknowledgement

Permission to quote extracts from Hellyer's diary was kindly granted by its owner, Miss Mererid Roberts, and by the custodial institution, the Special and Rare Materials collection of the University of Tasmania Library.

Notes

1 Meston, A.L. 1958. *The Van Diemen's Land Company 1825—1842.* Records of the Queen Victoria Museum, New Series No 9, Launceston, quoting an article in the *Hobart Town Courier,* 7 February 1829 attributed to Surveyor General G. Frankland.

2 Curr, E. 1827. Records of the Van Diemen's Land Company, Archives Office of Tasmania, Hobart. VDL 5/1, Outward Despatch 70, 10 November 1827.

3 Hellyer, H. 1827. Hellyer Diary (Journal No 7), University of Tasmania Archives (R.12), Hobart.

4 Rollins, B.J. *The Australian Surveyor,* June 1988. Vol 34 No. 2. Henry Hellyer, Esquire, 1790—1832, Van Diemen's Land Company Surveyor: in his footsteps.

12

Save the Forests: forest reform in Tasmania, 1912-1920

Stefan Petrow

Are forest conservationists born or made? Is it through nature or nurture that we appreciate the wonders of trees? In the absence of the discovery of a forest gene, the conclusion must be that forest conservationists are made through education and the propaganda efforts of pressure groups. The dawning of first wave environmentalism in the late nineteenth and early twentieth centuries in England and America owed much to the educative role of such groups (James 1981; Williams 1989). In America pressure groups interested in preserving trees, such as the American Forest Congress and American Forestry Association, had allies in professional foresters, such as Gifford Pinchot, who educated the public and the forest industry in the virtues of scientific forestry. Activists like Pinchot went further than preservation for its own sake. They espoused Progressive principles of 'rational planning to promote efficient development and use of all natural resources', such as forests, water and minerals for the national benefit (Hays 1959:1-3, 28-9; Richardson 1962: ch. 7). Elite bureaucrats with scientific training would apply scientific advances to this end. It did not necessarily matter who owned the resources as long as they were used efficiently, but government regulation was required to prevent waste.

One way the American influence on Australian forestry was evident was in the formation of forest leagues. In November 1911 the Inter-State Forest

conference held in Sydney, on the motion of the Victorian Conservator of Forests H. MacKay, resolved that each State form a branch of the Australian Forest League for 'the advancement of forestry' (*Sydney Morning Herald*, 28 November 1911; RPICF 1911: 20-22; Grimwade 1922; Sutton 1935). MacKay saw the league's main object as the education of the public in forestry issues 'so that eventually a forest consciousness might be created in the public mind'. In October 1912 the Victorian branch was formed, followed by Tasmania in November 1912, New South Wales in June 1913, South Australia in July 1913, Western Australia in September 1913, and Queensland in December 1913.

Apart from a biography of Grimwade by Poynter (1967), the work of the Australian Forest League has yet to be subjected to historical investigation and only receives passing mention in recent histories (Tyrrell 1999; Hutton and Connors 1999). The focus of this paper is the work of the Tasmanian branch of the Australian Forest League and how it created public and political interest in forestry matters, which ultimately resulted in the *Forestry Act* 1920 and the creation of the first Forestry Department. Previous studies of the period 1912 to 1920 have not credited the Australian Forest League with helping to create the climate for a more progressive forest policy (Steane 1937). Nor have they mentioned the role of the Labor Party and the press in supporting forest reform. Gray (1939) and Carron (1985) placed too much stress on a 1916 report by British forestry expert D.E. Hutchins and overlooked the impact of articles written by local enthusiasts. Especially for the period 1912 to 1914 the Tasmanian branch contributed significantly to a growing public awareness of the need to stop the destruction of Tasmania's timber wealth, and of the economic benefits of afforestation and diversifying timber industry products.

Formation of the Forest League

After flirting with forest conservation between 1886 and 1892, successive Tasmanian governments paid little attention to forest destruction (Dargavel 1982; Young 1991). After 1902 substantial concessions were given to the Huon Timber Company and the Tasmanian Timber Corporation, but the government's expectations that the companies would take the lead in forest conservation were not met. The government also failed to obtain a satisfactory revenue from the timber industry. Shackel (1968:17) has identified a resurgence of Tasmanian interest in conservation after 1900 and suggests that the ideas of Pinchot were influential.

Early interest in forest policy occurred in November 1910 when W.E. Shoobridge spoke of forestry to the Queenborough branch of the Australian Natives Association (ANA) (Shoobridge papers S3/9). He hoped his lecture would result in the formation of a forest league in every district of Tasmania and motivate public opinion to save the forests. The meeting agreed to form a Forest League but nothing apparently happened. Undeterred in February 1911 Shoobridge spoke on 'Afforestation in Tasmania' to a meeting of the Hobart branch of the ANA (*Mercury*, 15 February 1911; Shoobridge 1911). Arguing that much land 'would never be suitable for agriculture', Shoobridge thought that Tasmania was 'designed by nature as a forest reserve'. In the past timber had been little valued and was burnt, but 'now there was coming with a rush the enormously enhanced value of our timber for paper-making and kindred purposes'. To stop timber destruction and awaken the public to the value of Tasmanian forests, Shoobridge again urged the formation of a forest league.

The ANA took a significant first step by forming a forestry committee and agitating for the adoption of more modern forest practices. In July 1912 an ANA deputation to the Minister of Lands and Works Edward Mulcahy wanted immediate steps taken 'to conserve the timber resources of the State and to conduct experiments' on paper manufacture from native timbers (*Mercury*, 27 July 1912). Shoobridge bemoaned the destruction of nearly 3 million acres (1.2 million hectares) of land containing 60 million tons of wood, which would have been 'excellent' pulp for paper-making. He estimated that it cost 2s 6d a ton to destroy Tasmanian timber and at that rate it cost £7.5 million to destroy 60 million tons. If, on the other hand, this timber had been utilised for papermaking, it would have been worth 10s a ton or £30 million. Each year the Commonwealth imported paper valued at £3 million, but this would be saved by making paper in Tasmania. The government should appoint experts to 'test' as many varieties of timber as possible. Shoobridge thought that royalties of 6d per 1000 feet (3 cubic metres) were too low, and that through 'a faulty system of reckoning', Tasmania did not get the full amount of royalty it should from the amount of timber cut. Moreover, people took advantage of closer settlement regulations to obtain access to Crown lands and thus further diminished revenue from royalties. The ANA wanted the royalty increased to the level of other States, where it ranged from 5s to 20s per 1000 feet (3 cubic metres). At 5s per 1000 feet Tasmania would raise £40 000 a year, which could be devoted to improved forestry practices such as better supervision and reafforestation.

Mulcahy agreed that timber was 'a great national asset' (*Mercury*, 27 July 1912). Despite its being in existence for sixty years, 'very few' people made a decent living out of the timber industry, which faced 'great difficulties', including inadequate transport, 'the bulk and low value' of timber, and the want of markets. He was therefore opposed to increasing the royalty. Mulcahy saw the potential for a large paper manufacturing industry and agreed that waste material should be utilised. Although the cost of closely supervising all sawmills was prohibitive, he thought some improvements could be made. Limited finances would also restrict what could be done in conserving young indigenous timbers and planting non-indigenous trees.

As the Solomon Liberal Government failed quickly to develop a 'constructive forest policy', the ANA held a public meeting to form a Tasmanian branch of the Australian Forest League on 15 November 1912 (*Mercury*, 16 November 1912). Arguing in true progressive fashion that forest reform was 'in no sense a party question, but a national one', R.W. Koch, chairman of the forestry committee, felt it time for 'someone to arise with sufficient statesmanship and patriotism' to raise the profile of forestry issues. That someone, and the driving force behind the forest league, was Leonard Rodway. Rodway noted that of Tasmania's 11 million acres (4.5 million hectares) of forest land, 4 million acres (1.6 million hectares) was 'high forest' or 'dense forest', which was very valuable and needed protection. In the past forests had been exploited 'very badly', but now timber was increasing in value and it was incumbent on the government to wrest more revenue from it. Rodway believed Tasmania was the only place in 'the civilised world' that neglected forest planting and annually imported £35 000 worth of softwood which could be easily grown locally. In America forest leagues had been 'strong and energetic' for some years and, by keeping forest issues before 'the attention of politicians', had made much progress.

Rodway was ably supported by Shoobridge, who stressed 'the value of forests in conserving moisture' (*Mercury*, 16 November 1912). Rain falling in a forest area was 'worth four times as much as that which fell in a treeless district'. As a farmer Shoobridge had seen how crops would grow when 'sheltered by forests, but when the forests were cleared away they could not be grown at all'. He predicted that Tasmania could develop a timber trade worth £1 000 000 a year 'without diminishing' forest areas 'if proper methods' of conservation were employed. Governments had not been active because there was 'no political capital to be made out of forestry at present'. But if the Australian Forest League was formed and captured the public interest, 'it could mean votes, and so command the attention of politicians'. The force of Shoobridge's comments are driven home when we note in the

period to 30 June 1913 that the Tasmanian government received from forests in rent, royalties and other revenue a mere £4431 1s 9d (JPPP 1913c).

Work and influence of the Forest League

The ANA meeting held on 15 November 1912 agreed to form a forest league independent of the ANA (*Mercury*, 16 November 1912). Colonel W.V. Legge was President and L.J. Clifford, a financier, was Secretary and Treasurer. The committee included Rodway, Shoobridge, Koch and J. Wardman. Legge, Rodway, and Shoobridge had impressive credentials and took the lead. Born to a farming family in Tasmania, Legge was educated abroad and became a soldier (Dollery 1974, 78). Service in Ceylon in the late 1860s stimulated his interest in natural history. He became a fellow of the Geographical Society and member of the Zoological Society of London, founder and President of the Australasian Ornithologists' Union, and member and Vice-President of the Royal Society of Tasmania, to whose meetings he read numerous papers on diverse subjects. Legge became President of the biological section of the Australasian Association for the Advancement of Science (AAAS) in 1904 and in 1911 his growing interest in forest conservation prompted him to move for the formation of the conservation of water committee of the AAAS (AAAS 1912, p. xlii and 1914, pp. 337-41). Also in 1911, in a report to the Tasmanian government on the value and conservation of the cypress pine, Legge praised the work of the American Forestry Department and bemoaned the fact that Tasmania stood 'almost alone among the business communities of the world in its neglect and non-conservation of timber resources' (Legge 1911, pp. 11-12). As secretary of the AAAS water conservation committee Legge corresponded with Ministers of Forests in Europe, America and Japan and acquired considerable knowledge of forestry questions (*Daily Telegraph*, 26 February 1913).

Rodway was born and educated in England, where he became a dentist (Elias 1988). Arriving in Hobart in 1880, Rodway spent his time away from the dentist's chair in the close study of Tasmania's botanical riches on which he published extensively. Rodway was appointed honorary government botanist in 1896, a trustee of the Tasmanian Museum and Botanical Gardens, advised the Department of Agriculture, was foundation member of the Tasmanian Field Naturalists' Club in 1904 and was a member of a board to advise the Minister on 'constructive forestry' in 1908 (Carron 1985: 64). Shoobridge was born on the Richmond estate Glenayr and became an

agriculturalist noted for his willingness to innovate and a respected meteorologist (Broinowski 1970; Chapman 1988). He pioneered new irrigation techniques for hops and apples when he took over his family's estate at Bushy Park. Although in 1892 he became the first president of the Council of Agriculture, he had a vision of Tasmania as an industrial powerhouse sustained by hydro-electricity. Deeply religious, Shoobridge espoused a form of Utopian socialism and later joined the Labor Party.

The *Mercury* generally approved of the Australian Forest League's aims, but had one reservation about the statement that forests were cut for 'a mere pittance' (*Mercury*, 27 February 1913). This was 'a sop to the Labour Cerberus', which detested large timber companies. If the league avoided 'this peril of party political feeling, it may do splendid work' in a number of areas. First, it should encourage tree planting in areas 'not naturally favoured' in this way, especially in the Midlands where farms needed shelter from winds. Second, it should investigate the best ways to manage the introduction of softwood timber and identify the areas in which such timber may be grown profitably. Finally, by conducting experiments in the practical uses of the by-products of timber, it would earn the right to ask for government assistance. In these ways the forest league will fill an important role 'both in stimulating public interest and in gathering and compiling useful information'.

Although the exact membership numbers are unclear, after one year Clifford described the membership as 'fairly large', with new members joining periodically (*Daily Post*, 31 July, 2 August 1913; *Mercury*, 1 October 1913; Legge 1913). The Australian Forest League corresponded with Forestry Departments in the other States, America, and other parts of the world, collected 'a most comprehensive supply of literature' on forestry, and received letters of support from the American Forest League and the South African Forest Union. Clifford distributed 'a mass of valuable information' on the need to protect Tasmania's valuable timber resources. Led by architect Alexander North, an active body was formed in Launceston and received support from influential men and the northern press. North was 'keenly interested' in forestry, believing that Tasmania's fortunes were 'most indissolubly bound up' with it (*Daily Telegraph*, 26 February 1913). In September 1913 a new constitution was drawn up, creating the Tasmanian Forest League and encouraging the establishment of branches in other parts of Tasmania. The Tasmanian Forest League threw its support behind related movements, such as the campaign to establish a national park at Russell Falls and Mount Field (*Mercury*, 30 September, 2 October 1913). But the main aim was to advance 'educational, legislative, and other measures tending to

ensure the preservation, extension, and renewal of forests' (*Mercury*, 1 October 1913).

In 1913 the Tasmanian Forest League stimulated interest in forestry by publishing lectures and speeches in the popular press. Rodway, Shoobridge, Legge, and Wardman wrote impressive pieces covering all aspects of the forestry question. One theme, expressed in sorrow more than anger, was the legacy of the past. Bent on agricultural development, the early settlers cleared forests to grow crops and did not realise that 'the fertility of the land depended upon the forest, that without the timber the land would become valueless after a very short period of years' (Shoobridge 1913b). Shoobridge was heartbroken to think that 'the toil of an army of brave, hardworking men for years [had] gone for nought'. Ringbarking by pastoralists had also wreaked much destruction (Legge 1913). Less worthy of sympathy was the more recent practice of young axemen practising their sport by felling 'young trees of splendid growth and clean boles' (Legge 1913). This 'pernicious practice' had wantonly destroyed much valuable timber and should be 'rigidly forbidden'.

Apart from economic gain and sport, forests had been destroyed through complacency and apathy. Rodway believed that the pride of Tasmanians in the extensive nature of their forests and their 'enormous trees' engendered a feeling of 'happy complacency that our forest wealth has placed us beyond all question of shortage' (Rodway 1913). Shoobridge shared this awe of 'the huge trees of the virgin forest', especially the forests in 'the great range of mountains' running down Tasmania's western half, but was more condemnatory of Tasmanians (Shoobridge 1913b). He felt it was 'wicked' and 'a scandal' that people were 'so apathetic' about the destruction of 'their greatest natural and economic asset'.

The leading lights of the Tasmanian Forest League were all keen that Tasmania take advantage of the dwindling world supply of softwood (Rodway 1913; Wardman 1913). Tasmania should follow the other States in supplying its own wants, but should also develop markets overseas. Wardman thought Tasmania was more suited to growing and developing softwoods than any area south of the Equator, except the south island of New Zealand (Wardman 1913). Tasmania had 'all the essentials for successful culture—a temperate climate, sufficient moisture, shipping facilities, equal to or better than' any neighbouring State. Shoobridge pointed out that Belgium did not have one eighth of Tasmania's timber resources, yet earnt £4 000 000 from wood pulp (Shoobridge 1913b). The fineness of its fibre made Tasmania's gum wood 'one of the best timbers in the world for making wood pulp', but, although Tasmania was 'crying out for

development', nothing was done. If the timber industry was developed, people would come to Tasmania, workers would receive better pay, Tasmania would progress.

Tasmanian Forest League members advocated afforestation and reafforestation. If land under forest was cleared of weeds and useless trees, Rodway thought it will 'reafforest itself with little care, and should remain a permanent forest reserve, affording a perennial timber supply' (Rodway 1913). Foresters needed to apply their expertise to plateaux, moorland, and sparsely timbered areas. They should avoid the errors of the past and not plant oaks, araucarias, and Oregon on unsuitable bluestone rock, which only served to lend credibility to claims that certain trees would not grow in Tasmania. Rodway was convinced that Remarkable, Bentham, Aleppo, and Himalayan pines; silver firs, spruce, sequoia, and Oregon 'will succeed magnificently if only care be exercised in planting on suitable land'. Rodway suggested experimental planting of larch and spruce on barren uplands. The two most suitable spruces were the Menzies and the Norway. Rodway favoured the Norway, which would 'thrive on poor swamp soil where no other tree will grow'. Spruce was marketable after ten years and its wood was 'valuable for paper pulp'.

Legge identified many areas all over the island containing 'valuable' timbers (Legge 1913). He thought the Tasmanian Forest League should encourage the planting of indigenous pines and was impressed with the durability and use for building of the Tasmanian species of cypress pine (Legge 1913). He also favoured the afforestation of 'exotic hard and soft woods of quick growth and commercial value in any favourable, unalienated areas with suitable climatic and soil conditions'. While supporting the afforestation of Tasmanian hardwoods, Legge thought the main thrust of afforestation should be softwoods, as Tasmania had the perfect climatic and soil conditions to grow 'the best commercial pines and conifers'.

The Tasmanian Forest League stressed the advantages of forestry to farmers. Wardman advocated 'a progressive scheme of forestry' of exotic and indigenous trees where farmers and orchardists needed protection from 'high winds' (Wardman 1913). In addition to shelter, Legge encouraged farmers to plant 'thick belts, four deep', which would also provide timber for future generations (Legge 1913). A related point was the symbiotic relationship between trees and water supply. Shoobridge described how rain, 'filtered through thick growth of trees and plants, ferns and moss', flowed in 'clear, sparkling streams to creeks and rivers' (Shoobridge 1913a). The network of roots held the ground together so that soil was not washed into the water. The trees and plants stopped 'the scorching sun and drying winds'

from evaporating the water. The mountain plateaus operated as nature's huge reservoirs, but in Tasmania many mountain sides had been 'denuded of timber by fires, and clearing, and wasteful destruction, removing the protective covering'. Thoughtless settlement to the source of streams also removed trees and had contaminated water supplies for rural and city dwellers. These factors combined to cause the plentiful 'crystal streams' to be replaced by 'intermittent rushes of dirty water'. One aim of the Tasmanian Forest League was 'to conserve existing areas and prevent further destruction, and so preserve our water supply'.

Much of the success of the Tasmanian Forest League's conservation and afforestation proposals depended on the creation of a Forestry Department as formed in other States (Legge 1913). Legge blamed the absence of an organisation to control lumbering operations on the 'apathy' of past parliaments, governments, and the Lands Department. He conceded that no one had believed that Tasmania's timber resources would run out or that the world would experience 'a timber famine', but consumption had grown enormously and every government had 'to safeguard the supplies it possesses' and place sawmill operations under 'rigid supervision'. Legge favoured the Victorian system of permits and strict enforcement of the regulations by district foresters (Legge 1913). Victorian mill-owners were required to fell trees of a certain growth, transport fallen logs to the mill 'without delay', prevent the destruction of young growths, avoid fires, and cut up and stack tree-heads. The absence of such precautions in cutting and the inflammable nature of the wood had caused the rapid disappearance of softwood scrubs on the West Coast.

Legge felt it crucial that a capable conservator be appointed to head the new department. Not a mere forester, the conservator should be educated in forestry and have experience of Australian conditions (Legge 1913). Legge specified 'a man of administrative ability, good in the office, and with a strong physique for bush travelling in our rough winter climate', who possessed 'tact and a firm will to deal with difficult conditions' arising in lumbering and the timber industry. The Tasmanian Forest League would 'zealousy endeavour' to ensure the government supported the Conservator of Forests to protect and increase timber supplies, check abuses, and replenish stocks by afforestation. Encouraged by Minister of Lands Mulcahy, Legge and Rodway drafted a 'model' bill based on Victorian and South Australian legislation to create a Forestry Department (*Daily Telegraph*, 26 February 1913; *Mercury*, 1 October 1913). The *Mercury* supported the adoption of a modified Victorian *Forest Act* to meet Tasmanian conditions

and the establishment of 'a properly organised Forest Department' (*Mercury*, 17 October 1913).

More significant was the support of the Labor Party. In June 1913 at the Labor Party conference at Latrobe, Shoobridge moved that a State Forest Department be formed to conserve timber and put Tasmanian trees to best use for wood pulp, paper distilling and afforestation (*Daily Post*, 20 June 1913). Shoobridge accused the Liberal Government of being too close to timber syndicates and of planning 'to make a monopoly of our timber resources'. Editor of the labour newspaper, the *Daily Post*, Edmund Dwyer-Gray predicted that if they planted 1 million acres (0.4 million hectares) of exotic trees in a generation, 'they could laugh at the public debt'. Impressing delegates with his 'ripe experience, great business ability, and expert knowledge on many practical questions', Shoobridge secured unanimous support for his motion (*Daily Post*, 25 June 1913). The Labor Party put forestry on its platform and joined the Tasmanian Forest League in its efforts 'to preserve and enhance the greatest of our national assets' (*Daily Post*, 1 September 1913).

On 18 September 1913 V.W.O. Barker, Labor member for Denison in the House of Assembly, moved for a royal commission into the management of Tasmania's timber resources (*Mercury*, 19, 26 September, 3, 17 October 1913). Barker wanted to stop the 'ruthless waste' of timber and, by collecting data, thought a royal commission would result in 'wise and proper' management in the future. Issues for investigation would include the feasibility of starting State sawmills, establishing new timber industries, and planning for reafforestation. Another Labor member James Belton wanted the royal commission to investigate 'the ring or combine' that oppressed small sawmillers and kept royalties down. All members agreed that forest policy needed reform, but most doubted that a royal commission was needed. They accepted Premier Solomon's assurances that the government was alive to the importance of forest reform. Solomon thought a royal commission was 'an unwieldy way' of getting information on such a diverse subject and would take seven years to complete. After he announced that the chief forest officer would be sent to Victoria and New Zealand to make 'first-hand' investigations and that he had obtained the assistance of the Victorian Forestry Department, Barker withdrew his motion.

The *Daily Post* partly blamed the Tasmanian Forest League for the defeat of the motion. While appreciating the educative role of the league, the *Daily Post* pointed out that this would take many years to be effective and in the meantime axemen continued their 'deadly work' (*Daily Post*, 30 September 1913). The league 'cannot afford to live in an atmosphere removed from

political events'. A resolution in favour of the royal commission at the annual general meeting might have persuaded some wavering Liberal members to vote for Barker's motion, but the league remained quiescent. This might have been due to the fact that Secretary Clifford was also secretary of a Liberal League (*Daily Post*, 23 February 1914). The Tasmanian Forest League must know, thought the *Daily Post*, that a Labor Government would do more for forestry in three years than lectures and pamphlets could do in a generation. When Labor won office, the members of the Tasmanian Forest League will be 'like bees round the hive at the door of the Labor Minister's office'. They will then be 'working bees' but now they were 'remarkably like drones—not to say bumble bees—large and innocuous—that hum and do not sting'.

But all was not lost and Premier Solomon, true to his word, made tentative steps towards reform. A draft Bill authorised the government to extend the State nursery, buy private lands for tree-planting; and plant-out, care and protect young exotic and indigenous trees likely to have 'commercial value' (JPPP 1913a). The chief forest officer was sent to Victoria and New Zealand to obtain 'practical knowledge' of how their Forest Departments operated and in December 1913 the Assembly voted £1000 to create a reserve near Russell Falls and to plan a large nursery there as well as a small nursery at the State farm (*Mercury*, 4 December 1913).

Opposing the League: the bureaucracy fights back

Although reform was supported by both the political parties, the major opposition came from within the bureaucracy and in particular from the Surveyor-General E.A. Counsel, who had control of the Forestry Branch of the Lands Department. Son of a farmer, Counsel saw the prosperity of small farmers as crucial to Tasmania's future. Fellowship of the Royal Geographical Society and the Royal Society of Tasmania attested to his scientific ability. In 1910 Counsel survived twenty charges of maladministration investigated by a royal commission and showed himself to be a hardy defender of departmental interests and the forest system he in part had set up (Elias 1981; Young 1991: 62; Roe 2001). In private reports and memoranda to the Minister, in his printed annual reports, and in interviews to the press Counsel painted a less bleak picture of forest practices than the Tasmanian Forest League and responded to the views of its members in less than flattering terms. By stressing the cost of afforestation and the dangerously amateurish views of the Tasmanian Forest League, Counsel did his best to cast doubt in his Minister's mind that radical

change would be beneficial. He exemplified the truism that bureaucrats hardly ever liked amateur enthusiasts. In short, Counsel practised the art of mandarin obstruction, but within limits was 'sympathetic to forestry' (Carron 1985: 63).

Counsel's first ploy was to highlight the expertise of his staff. The Forestry Branch included a chief forestry officer with long experience J. Compton Penny, 'a highly competent' chief inspector T.J. Stubbs, and inspectors of timber, assisted by Crown Land bailiffs (*Mercury*, 18 July 1914). About 1 million (0.4 million hectares) acres of land were reserved from selection for timber purposes and 144 810 acres (58 603 hectares) were held under timber leases. In 1912 sawmills cut 62 million superficial feet (18 971 cubic metres) of timber worth £324 857. While some extra help for 'outdoor inspection' would be welcome, Counsel thought that 'the efficiency and economy of administration cannot be improved on' and any change in administration would be 'a retrograde step'. There was no need to appoint an expert because they had 'experts' in the Department of Agriculture.

Counsel stressed that the conditions in Tasmania were so different that suggested reforms based on the experience of other places were 'more or less fallacious' (JPPP 1913b). Counsel knew of no place 'where there are so many conflicting interests and where the subject of forestry is surrounded by so many difficulties'. Counsel did not give details except to point out that soil quality in timber beds was variable and permanent settlement of land was the first priority wherever the soil could sustain a settler. The country often had a 'broken configuration' and obstructed communication and the removal of matured timber. Parliament had strengthened the hands of vested interests and bush fires caused much damage to forests.

As New Zealand conditions were more attuned to Tasmania's than any of the Australian States, Counsel suggested that the government could learn most from the New Zealand forest experience (*Mercury*, 18 July 1914). As New Zealand spent £236 074 over twenty years on forest development with little return, Counsel warned his political masters not to expect a rapid boost to the Tasmanian economy from afforestation, and in any case 'every economy, consistent with efficiency' would have to be exercised. Counsel predicted that local timbers would take three or four times longer to reafforest than imported trees and therefore recommended against planting Tasmanian hardwood timbers for commercial purposes. But blackwood, Huon pine, King William pine, and celery-top pine generally rooted well and possessed 'excellent qualities' for making furniture. He also favoured the black and silver wattle, which grew quickly without much attention.

Counsel attacked the 'misrepresentation' in the press by those who claimed agricultural settlement had been responsible for the 'ruthless destruction of valuable timber' (*Mercury*, 20 July 1914). In the north-west, an area he knew well, the cutting and sale of timber had created revenue to develop agricultural holdings, which paved the way for the successful settlement of that part of Tasmania. Counsel came out strongly against a separate Forestry Department, a proposal he characterised as 'a dangerous and costly experiment, which would ultimately end in failure'. A separate department would duplicate work and 'dual control' was 'always wasteful and unsatisfactory'. Chief forestry officer Penny devoted all his time to his work and no one was 'more intimately acquainted with the industry or more zealous in its cause'.

In his recommendations, Counsel was more progressive and, after putting the Tasmanian Forest League in its place, perhaps sought to wrest control of the direction of change from outside dictation. An expert should be appointed to report on the suitability of Tasmanian timber for wood pulping and paper manufacturing (*Mercury*, 20 July 1914). Areas should be reserved and proclaimed State forests and be used exclusively for afforestation, either 'by natural or by artificial means'. The areas should be proclaimed in 'different localities and at various elevations, as State plantations' for raising and cultivating forestry trees. The plantations and nurseries should be selected by an expert from the Department of Agriculture and the plantations should be managed by an experienced nursery-man. Some areas should be proclaimed wattle plantations and, as in New Zealand, prison labour should be used where possible to reduce costs. He estimated that afforestation of 50 acres (20 hectares) with exotic trees would cost £1617.

The Tasmanian Forest League had remained strangely quiet since the advent of the Earle Labor Government in April 1914 and did nothing publicly or privately to persuade Labor to act on its platform (*Daily Post*, 18 September, 10 November 1914). Counsel's comments awoke the Tasmanian Forest League from its slumber and it pressed for the creation of a Forestry Department. Koch pointed out that the division of forestry duties, with the Agricultural Department dealing with afforestation and the Lands Department with timber leases, made little sense (*Mercury*, 31 July, 11 August 1914). Counsel's description of their arguments for a Forestry Department and forest reform as 'exaggerated, impracticable, or erroneous', showed, claimed Koch, that he had closed his mind to change. Rodway thought forestry would never succeed until it disassociated from the Lands Department, where it was 'a side issue' (*Mercury*, 31 July 1914). Just because

New Zealand wasted money did not mean that Tasmania had to follow suit. Counsel should have looked more closely at Victoria and South Australia, 'where they made afforestation pay'.

Rodway maintained that 'the crying need' was improved supervision of timber cutting: they had to stop 'the best and soundest trees' from being cut and require removal of 'old rotten trees' (*Mercury*, 31 July 1914). Tasmanian forests were 'old forests' and in some nineteen out of twenty trees were 'far beyond their maturity period' and had to be 'taken out if the young trees were to grow properly'. Rodway charged Counsel with 'want of knowledge' by suggesting the reafforestation of pines, which only grew 'under certain conditions' and were unsuitable for silviculture. If Huon pines were planted, in 'five hundred years you might be able to cut umbrella sticks'. Eucalypts would come to maturity, not in forty or fifty years as Counsel claimed, but in 350 or 400 years. Contrary to Counsel's view, stringybark and blue gums were the 'best timbers': cider, yellow and other gums were far superior for most purposes. Rodway doubted the expediency of growing conifers on a large scale and suggested small scale testing to establish their suitability.

Backed by his senior departmental officers Penny and Stubbs, Counsel returned to the fray in the press by justifying his opposition on financial grounds to a separate Forestry Department, maintaining that New Zealand was a better model than Victoria and South Australia, citing evidence that young trees made the best timber, and characterising the Tasmanian Forest League's comments as absurd and negative (*Mercury*, 8, 11, 15 August 1914; JPPP 1915-16). In his next annual report, Counsel answered his critics at greater length and made a new and fundamentally important point in questioning whether afforestation would be as successful in Tasmania as in the other States (*Mercury*, 18 November 1914). He posited that 'firing the country or ringing of the large trees is all that is needed for the reproduction of eucalypts as timber, and that it will reproduce quicker under these conditions, quicker and better than can be done by any method of artificial planting'. This was also true of blackwoods and wattles. Counsel asked why should Tasmania begin a costly afforestation system 'for the sake of coming into line with other places when necessity dictates a different and less expensive policy?' In twenty-five years as Surveyor-General he had 'never heard a practical sawmiller advocate reafforestation'. Counsel believed it 'wholly impracticable' to remove all deadwood from forests: yellow gum and cider gum possessed 'excellent qualities', but they either grew in small numbers or were located in difficult or remote areas. He reaffirmed the expertise of Penny and Stubbs and charged his critics with being 'irresponsible' in not assessing the impact their proposals would have on

vested interests and with being 'ignorant' of the regulations controlling the timber industry.

The Labor Government was well-disposed towards forest reform, but Counsel's objections, the limited finances at its disposal caused by depression and drought, and the inescapable diversions caused by the onset of war, ensured that the Tasmanian Forest League's proposals would not be adopted. In April 1915 Shoobridge, writing under the pseudonym 'Forester', told *Daily Post* readers that the Labor Party was 'better at making platform promises than carrying out practical proposals' (*Daily Post*, 1 April 1915; Shoobridge papers S3/9). The Minister of Lands, James Belton, a one-time sawmiller, told the *Mercury* that it would be unwise to establish a Forestry Department or attempt reafforestation of exotic trees on a large scale because of the expense (*Mercury*, 22 July 1915; *Daily Post*, 7 February 1916). But that did not mean that progress was impossible. Belton favoured a survey of forest lands and timber resources, greater conservation of native timbers, greater protection of young trees from bush fires, and an end to 'the ruin of the forests'. He intended to give farmers a lesson in tree planting by 'judicious planting on the closer settlement areas'.

The Labor Government sent Shoobridge to Canada and America to enquire into water power and irrigation developments and, after visiting the Price Brothers Mill at Jonquiere in Quebec, he returned enthusiastic about the potential of wood pulping in Tasmania (Broinowski 1970). The Labor Government arranged, at a cost of £1004 2s 4d, for Henry E. Surface, consulting engineer in forest products to the American Department of Agriculture, to report on the feasibility of manufacturing paper pulp from Tasmanian timbers (Surface 1915-16; *Mercury*, 1 October 1915). Surface concluded that there was little chance of establishing a successful wood pulping and papermaking industry in Tasmania. The hardness, large amount of water, natural colour, and 'comparatively short fibre' of Tasmanian woods limited pulping to the soda process which would be too costly to undertake profitably under existing Tasmanian conditions. The timber industry was not 'flourishing', with sawmills being closed down due to insufficient orders and scarce labour (*Mercury*, 21 November 1916).

Hutchins Report, war and achievement of reform

The debate on forest policy and practice was revived by British expert in 'scientific forestry' D.E. Hutchins. Hutchins had worked for the staff of the Indian Woods and Forest Department and had been Conservator of Forests, South Africa and Conservator of Forests, East Africa (Hutchins 1916;

Mercury, 22 June, 27 September 1915). Assigned to report on forestry for the Western Australian Government, this consultancy was extended to report on all the Australian States and New Zealand. Hutchins included a chapter on Tasmania in his valuable 1916 report *A Discussion of Australian Forestry* (Hutchins).

Hutchins described Tasmania as 'the one all-forest State in Australia', where 'good' trees could be grown anywhere, where woodmen could work in 'a bracing climate' and where forestry could be undertaken 'so easily on European lines' (Hutchins 1916: 332-5, 340-42). Yet reckless timber grants, inadequate regulation, and failure to check the devastation of fire had caused 'ruin and waste'. He stressed the importance of forest demarcation, whereby experts selected the best forest land to be kept forever as forest estates and noted that Tasmania was the only State where no attempt had been made at demarcation. This should be the responsibility of a Forest Department, which should apply the principles of scientific forestry to save existing forests and restore old ones. But scientific forestry had been 'pooh-poohed and disregarded', the University had no Department of Forestry and the Public Library contained no work on forestry. Rather than teaching forestry, Tasmanian schools taught 'the stock-in-trade of [the] British pedagogue'—Latin and Greek, French and German, Euclid and theology.

Hutchins suggested that the forestry question had been ignored because of 'the influence of parochial politics and British ideals' (Hutchins 1916: 329-31). The population was 'English to the core, intensely conservative, and with all the Englishman's virtues and failings'. Both England and Tasmania lacked State forestry because they made a virtue of not slavishly following the fashions of their respective continental neighbours, but this insularity had its costs. The flagging Tasmanian economy lost £90 000 in revenue from forests and in twenty years £10 000 000 in timber exports because it neglected forestry and adopted outdated methods. A few local men who made a fortune out of forest destruction used their influence to stop reform. This neglect and backwardness added to the cost of forest demarcation and justified either the Commonwealth Government or the Victorian Government taking over Tasmanian forestry. Otherwise Tasmania should borrow between £4 000 000 and £6 000 000 from the Commonwealth Government to demarcate forest areas and institute a modern forest policy.

Hutchins' comments, if not new, were certainly expressed in controversial and provocative terms. Counsel treated Hutchins' report with the same contempt as the Tasmanian Forest League proposals (*Mercury*, 6 January 1917). Counsel argued that, while Hutchins was an experienced forester, he had gained this experience in tropical climates that were

completely different from Tasmanian conditions and this led him to many 'erroneous' comments and misconceptions. Counsel questioned Hutchins' financial statements, doubted that the return on forest demarcation would be worth the huge costs, contradicted his claims of large scale forest destruction by settlement and fire, and scotched the idea of appointing a Conservator of Forests to run a separate Forest Department as a needless expense. Counsel ended by highlighting his own 'forward and progressive measures' in producing softwoods to meet local needs. Forest practice reflected his belief that the best policy was 'steady and consistent effort spread over a lengthened period of years'. Areas where 'young growths of indigenous timbers' were establishing themselves and areas cut out by sawmillers and not suitable for settlement were reserved from selection (JPPP 1916-17, 1917b) At first, 50 acres (20 hectares) of some 'exotic soft woods' were planted on the State farm and later the fertility of East Coast soil was tested 'for the economical production of black wattle' (JPPP 1917a). The experiment worked and encouraged Counsel to support 'a more vigorous policy' of wattle plantation.

Although he had known Hutchins for many years and found his views 'exceedingly interesting and valuable', Leonard Rodway thought his comments 'too general' and betrayed a lack of knowledge of local conditions (*Mercury*, 4 January 1917). Hutchins neglected to mention two key points affecting forest policy in Tasmania, which undermined his arguments. One was the high cost of wages and the shortage of cheap prison labour. The other was that, unlike in Europe, not every part of the tree was used in Tasmania. Timber cutters took the bole out and left the rest to clutter the forest, hampering the chances of reafforestation. Rodway argued that 'the economical and successful working of a forest policy largely depends on what may be obtained for the waste parts'. Rodway became the most prominent member of the Tasmanian Forest League to urge in his articles to the press the adoption of modern forestry, which he defined as 'the science and art' of teaching how 'to make the best use of our woodlands' (*Daily Post*, 10, 12, 24, 26, 31 July, 4 August 1917).

More significantly, Rodway was also a member of the Tasmanian State sub-committee of the Advisory Council of Science and Industry, the precursor to the CSIRO. This high-powered committee included J.H. Butters, Chief Engineer and General Manager of the Hydro-Electric Department, and H.W. Gepp, General Manager of the Electrolytic Zinc Company. This sub-committee decided to concentrate 'all possible attention on the important problem of finding a means to utilise the products of the natural forest in Tasmania, with a view to making a commercial proposition

to carry on the forestry on scientific lines' (*Daily Post*, 1 October 1917). They sought to identify how to make commercial use of 'waste timber' as well as selling sawn timber. Laboratory investigation would determine what timber parts could produce wood pulp, cellulose, volatile and essential oils, dyes, distillation products, and floorings and building materials. Premier Lee favoured having 'a progressive timber policy' and establishing 'the commercial uses of Tasmanian timbers and waste products', but only allocated £500 to the sub-committee (*Daily Post*, 4 October 1917; *Mercury*, 23 November 1917).

As the *Mercury* pointed out, little could be done with £500—four times that amount was the minimum required—but it marked the first step towards greater government involvement in forest management (*Mercury*, 26 November 1917). Circumstances dictated this change of direction. The war had accentuated the pre-war timber famine and demonstrated the need for Tasmania to become 'more self-sustaining, less reliant upon outside supplies' by raising trees for fruit cases, making pulp for paper, and using local timber for building purposes (*Mercury*, 5 October 1917, 19 February 1918). The development of forestry and related industries would provide employment for the soldiers returning from war (*Daily Post*, 22 November 1917). If the timber industry was reorganised, then Tasmania could exploit the 'enormous amount' of post-war rebuilding (*Mercury*, 19 February 1918).

Bad management in the past had created the impression that Tasmanian timbers were 'inferior' and consequently they did not receive their 'proper price' or were ignored completely (*Mercury*, 4 March 1918). In 1918 the *Mercury* regularly urged the Lee Government to restore that reputation, save existing forests from destruction, and replant forest areas on 'a sufficiently extensive scale' in areas denuded of trees (*Mercury*, 9, 30 July 1918). A 'continuous and well-defined forest policy' had been promised by previous governments, but, as the end of the war approached, action could no longer be delayed (*Mercury*, 29 August 1918). This message was also communicated through Counsel's annual reports: the unprecedented demand for timber justified the Government in placing the timber industry and afforestation on 'a more progressive scale' (JPPP 1918-19, 1920-21). A powerful consensus seemed to be emerging.

Finally, in December 1919 L.G. Irby, who had much experience in the New South Wales forest service, was appointed Conservator of Forests to introduce 'a scientific system of management' and draft progressive forestry legislation (JPPP 1919-20). Approved by an interstate forestry conference meeting in Hobart, Irby's 1920 *Forestry Act* created a Forestry Department to protect forests (Irby 1920; *Mercury*, 1, 8 December 1920). This inauguration

of a new era in forestry management also marked the end of the Tasmanian Forest League, which no longer felt the need to exist and placed its faith in Irby (*Gum Tree* 1920). In the 1920s this faith was found to be misplaced. Irby proved to be somewhat eccentric and ineffective (Roe 1995) and the Act to be deficient in many ways. The new Department 'accepted the issuing of permits and the collection of royalty as its main functions' and, starved of funds, left many things undone (Steane 1937; Dargavel 1982; Pyne 1991). The application of the principles of scientific forestry did not really begin until the mid-1930s. Then the Australian Forest League resumed work, educating the public, and helping to create a new phase of forest consciousness in Tasmania.

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13

A land reborn: 'Lorinna over the bridge'

Robert Onfray

Introduction

The upper Forth Valley is a glacially formed U-shaped one, containing steep lateral gullies and occasional rocky cliffs, with the Forth River set in its narrow floor. The upper slopes are of moderate relief and descend from over 1000 metres elevation where the slopes steepen dramatically until about 300 metres and then flatten and gradually descend in varying widths to the valley floor (Commission of Inquiry 1988).

It is within this valley that an unnamed place known locally as 'Lorinna over the bridge' is situated (Map 1). Lorinna was one of the earliest settlements in the area and it became a gateway for mineral exploration, mining and agriculture. It was accessed from Lorinna via a large wooden bridge which spanned the Forth River. The land was bought primarily for agricultural pursuits under the *Crown Lands Act* but was never settled by the owners. They lived in Lorinna or other nearby settlements. There is nothing significant about the development and history of this area until the early 1970s when the construction of Cethana Dam as part of the Mersey-Forth hydro-electric scheme drowned the bridge over the Forth River and denied the landowners their traditional access to the area.

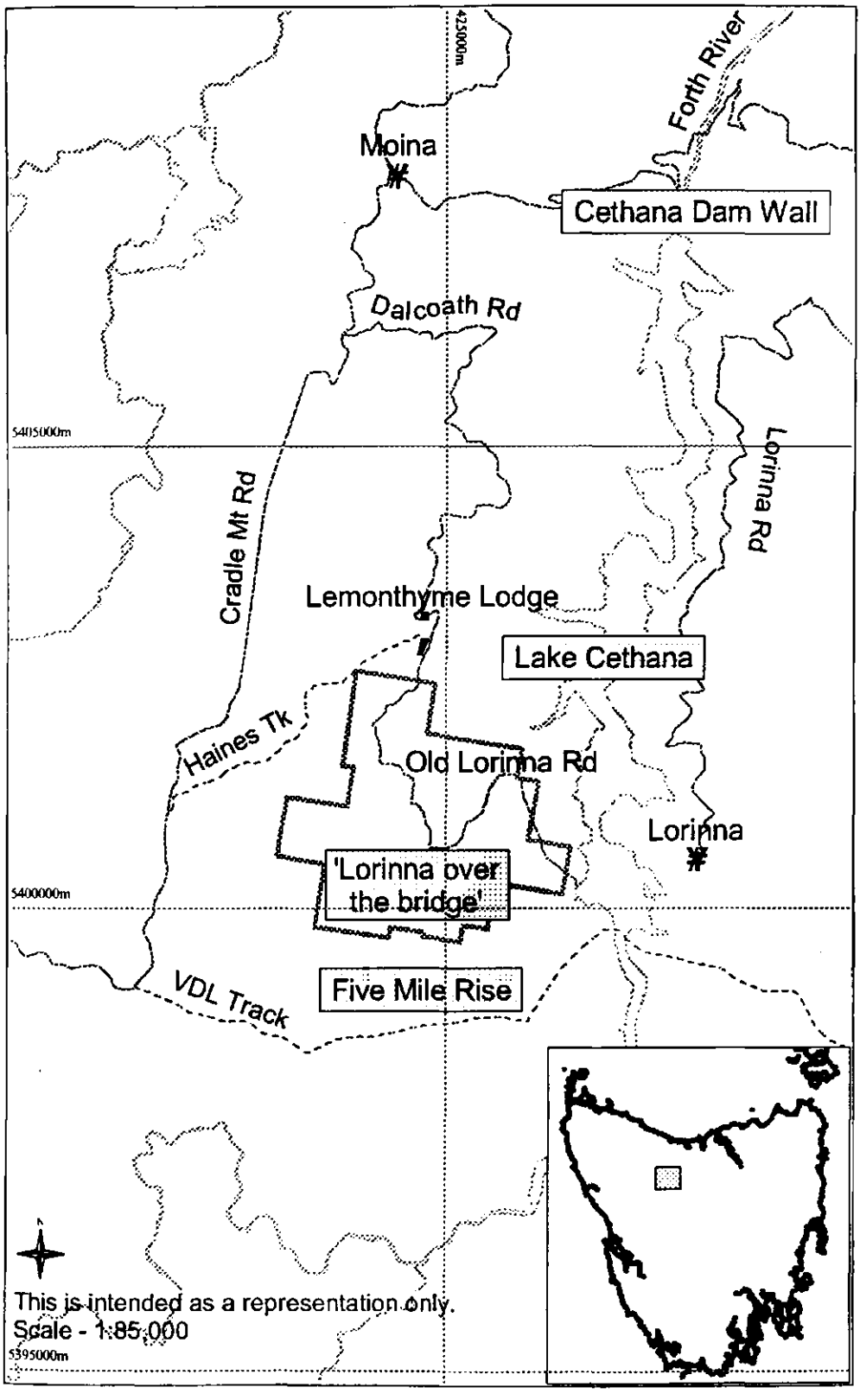

Figure 1: 'Lorinna over the bridge'

Early exploration

The Van Diemen's Land Company was one of the several chartered companies that were started in the United Kingdom to acquire large tracts of land in the colonies for agriculture. In 1825, it applied for a grant in Van Diemen's Land which was presented to them as, 'blessed with a salubrity of climate...which is found to be peculiarly favourable to the rearing of sheep' (Curr 1824 cited in Meston 1958). They were granted 250 000 acres (101 000 ha) in the north-west and this was increased to 350 000 acres (141 000 ha) due to the inferior quality of the soil in some areas. The company's chief, Edward Curr and its surveyors, Henry Hellyer and Joseph Fossey, started the search for suitable wool-breeding land without great success. Because the company's base was established in the isolated north west-coast, a stock route was required from the settled districts. Hellyer and Fossey completed a trail from Launceston to Emu Bay (Burnie) in 1829. They were the first Europeans to enter the upper Forth Valley and crossed the Forth River near where Lorinna is situated. Hellyer described a series of falls entering the Forth River as:

> shrouded in a winding sheet of vapour...from a precipice of vast height into an abyss where huge logs brought down by its force, lie in heaps encrusted by petrification (Hellyer 1832 cited in Haygarth 1998).

The track (known as the Great Western Road) passed through the high country of the Magog Range, the upper reaches of the Mersey, Forth and Leven River valleys and across the Vale of Belvoir. It was so steep in places that it could not be negotiated by bullock wagons and with great difficulty by packhorses (Pink 1990). It was never more than a narrow, poorly marked cattle track that was eventually abandoned although it is still evident in places today.

Mining

The Moina, Mount Claude and Lorinna areas south of Sheffield are one of the most mineralised regions of the north west coast with deposits of wolfram, gold, tin and silver and lead. Recent geological work by Mineral Resources Tasmania has shown that the mountainous country south of Sheffield is in the northern extremity of the highly mineralised zone known as the Mount Read Volcanics, which resulted from volcanic eruption in the Cambrium Period about 550 million years ago (Pink 1990).

Figure 2: Section of the VDL Track on 'Five Mile Rise'

In the late 1850s James 'Philosopher' Smith explored the upper Forth Valley for minerals and timber. The accessible Pencil Pine was logged at Dove Creek and he used the river, flooded by autumn and winter rains, to transport the logs to the river mouth for transport to sawmills. The first discovery of minerals by Smith was gold at Golden Point just north of the VDL

Track at the Forth River crossing. Smith and other miners had to endure isolation and severe weather as well as unforgiving vegetation. Nothing eventuated from their early searches but it did lead to interest in mining in the valley. Although the early finds were unprofitable or quickly worked out, the prospecting opened up tracks, developed trade and encouraged farming on the fertile soils of the valley.

The 1880s started with the discovery of gold on the steep 'Five Mile Rise' section of the Great Western Road. Within ten years, five mines were established on the rise and tonnes of machinery were brought to the site. Considering the rugged terrain and the manual transport options, the goldminers showed remarkable fortitude. For example, for the 'Great Caledonian' mine site at the top of the rise, the gold ore crushing plant made up of a 25 horsepower engine, 15-head battery and a 10-tonne boiler was brought from Melbourne (Haygarth 1998). It took 36 bullocks to haul the boiler to the mine site (Day 1992). Gold mining ceased when finance dried up due to the 1891 depression. The shallow deposits meant the mines were small, had short, unprofitable lives and were simply abandoned. The ore bodies, whilst high in mineral content near the surface, petered out in both quantity and grade as the diggings went deeper. The miners moved to other areas further north around the present Moina site.

Development of Lorinna as a settlement

Lorinna was one of the earliest settlements in the Forth Valley. Mining activities nearby and deep red soils attracted people to the area. It was actually surveyed to become a town with streets and gardens but it was never gazetted. Some of the miners from the abandoned mines remained to do their own fossicking and mining or to clear and settle on the land.

In 1892 a wooden bridge was built to cross the Forth River and the first road to access Lorinna from the east was completed in the early 1900s. It was originally surveyed for a railway line to service the mines. This narrow winding road was one of the first engineered roads to be built in the region but was barely safe enough for single axle trucks. Between 1900 and 1925, Lorinna became a community in its own right and people began to move their families to the area.

Figure 3: Section of Lorinna Road

Tasmanian land settlement legislation

The system of alienation of Crown Land in Tasmania, particularly the less accessible and marginal sites, was complex and subject to a number of legislative changes. Ellis (1993) provides an excellent summary. The *Crown Lands Act* of 1903 and subsequent amendments in 1905 and 1911 required that land be used for agriculture although it did not have to be completely cleared and the grantee did not have to live on the grant. Land was sold only on credit either by direct application or by auction. The purchase price was

dependent on the class of land. First class land was valued at more than one pound per acre; second class land at between ten shillings and one pound per acre, and third class land at between five shillings and ten shillings per acre. One third of the purchase price was added to service the credit. A purchaser paid one-fortieth of this credit price immediately and the balance over 14 years, with instalments increasing year by year to reflect improving profitability. Each year the purchaser was required to undertake improvements to the land at different rates per acre depending on the class of land to a total equalling the purchase price. The purchase grants could be returned to the Crown if there was a default in either payment of instalments or in spending on improvements. Title to the land was granted once instalments had been paid and monies spent on improvements. The purchase grants could be resold at any time and while failure to pay instalments was usually followed up by the Crown, the failure to improve the land was not, although the granting of title was withheld (Ellis 1993).

Purchase Grants and land ownership

There were thirteen purchase grants on the western side of the Forth River across from Lorinna. Surveys commenced in February 1906 and the brief notes on the original survey plans do not provide many clues to the landscape at that time. Generally the soils were described as good quality (they are in fact deep red-brown soils derived from Tertiary basalt) and the landform considered steep. The overstorey consisted of white gum (*Eucalyptus viminalis/E. dalrympleana*) and stringybark (*E. obliqua*) with myrtle (*Nothofagus cunninghamii*), sassafras (*Atherosperma moschatum*), musk (*Olearia argophylla*) and dogwood (*Pomaderris apetala*) in the understorey. The timber was considered of 'fair quality but owing to the inaccessible nature of the country and the distance from the market' it was of little or no value. This description of the timber is significant since the Crown, under the *Crown Lands Act*, could decline an application for the purchase of land if it felt the timber could be utilised and instead declare a Timber Reserve. Otherwise the land would be available for purchase under the conditions described in the previous section.

Most of the purchase grants were issued by the early 1920s when the instalments were paid in full. Judging by the amounts paid, the lands were considered as first class (see above). In a couple of cases, the title was not issued until the early 1960s and in 1985. Only one title was more or less completely cleared and so satisfied the requirements of the *Crown Lands Act* in order to gain freehold title. An aerial photo taken in 1946 was used to

help determine the level of improvement to the lands. It clearly shows evidence of clearing. The original survey report for one block noted 'small improvements have been made by sowing grass seed after bushfires' and that it was 'covered with thick scrub.' The aerial photo shows cleared land that appeared to already carry pasture. An old hut was also present and still exists today.

Figure 4: Hut built early last century

Half of another block had been ringbarked and cleared by the mid-1940s and the subsequent scrub regrowth cleared again in the mid-1970s. A hut built around 1910 of split timber was renovated and rooms added in the 1970s. Cattle grazing continued until 1982 but was abandoned due to competition from the wallabies and pademelons.

Logging also occurred in small patches prior to 1946. A road was constructed down the steep ridge just south of Bulls Creek. It became known as 'Haines Track' named after the sawmiller whose machinery built the track to access the timber. The grade was too steep for the trucks to use fully loaded and so they had to use a ford crossing adjacent to the Lorinna Bridge and the Lorinna Road to transport the logs to the sawmill at Devonport. There was also an old horse and sulky trail from Dalcoath Hill

to the north, which was used during mining activities, but it was not suitable for waggons.

The aerial photo shows evidence of some form of disturbance, such as clearing or logging, on another property due to the younger regeneration patches. The main ridge running through the block supported a vigorously growing stand of *Eucalyptus delegatensis* in the late 1990s which appeared to be no older than 60 years and a result of a hot fire. I suspect a hot fire from the clearing operations on the adjoining property to the east probably raced up the ridge in the 1930s.

Small sawmills were set up on site in a couple of locations. One sawmill cut celery pine along the creeks and flats as well as hardwoods for other landowners in Lorinna for their houses in the early 1940s. Another sawmill was powered by a Burrison-Stewart steam engine and operated in the late 1930s and early 1940s. The wheels of the steam engine were recently moved to Victoria. It is now known that only three of these engines were ever built in 1860 in England. There are remnants from a post and rail fence where there was a bullock paddock, even though today it supports a dense stand of regrowth white gum. There is an old dozer blade from logging in the 1950s lying abandoned on one of the properties and a small heavily timbered section in the south was logged in 1968.

Hydro–electric scheme

The Snowy Mountains Scheme is generally accepted as the greatest engineering work undertaken in Australia, but the Tasmanian hydro-electric power schemes are of the same magnitude. Tasmania believed the generation of cheap hydro-electricity was the stimulus needed for economic strength. The mining boom in north west Tasmania in the late nineteenth century was short-lived (Mount Bischoff tin mine was one of the richest in the world; and gold at Mount Lyell and silver and lead at Mount Zeehan were large deposits). In 1891 the Bank of Van Diemen's Land, which backed many of the mining ventures, shut its doors. The Tasmanian Government was unable to raise money and mining activities declined. People instead cleared the land for potatoes and grazing.

The Hydro Electric Department completed the first scheme, near Great Lake in the Central Highlands, in 1916 (Lupton 1999). After World War II successive Labor Governments made hydro-electricity a symbol of Tasmania. To tap into the isolated waterways to generate electricity, Tasmania needed high voltage capacity to transmit electricity long distances from its point of generation. Tasmania has a relatively low population spread around

a number of centres in the north, south and west and has a rugged high landmass in the middle. This meant that public works such as roads and bridges were very costly to build. In the space of ten years in the post war period, seven power stations were opened at great capital expense to service the growing demand for electricity by emerging industries and consumers.

In the late 1950s, plans were presented for a power scheme for the north of the State. An underground power station was built at Poatina, by far the most expensive capital investment in the State's history. It opened the door to recognising the abilities of the engineers employed by the Hydro Electric Commission and gave impetus to building even more power schemes utilising the vast water resources of the State.

The Mersey-Forth power scheme was first conceived in the early 1960s. It involved the creation of three artificial lakes and seven dams and power stations stretching from the Great Western Tiers to Paloona, near the mouth of the Forth River. One of the dams, Cethana, was built on the upper Forth River just below Lorinna township. The dam wall is 112 metres high, one of the largest in the southern hemisphere. The variations in geology, topography and river flows meant that different designs were required for the seven dams. Most of the dams used rockfill instead of concrete for the main wall. Originally the Cethana Dam wall was to have been a concrete arch structure, however, a weakness in the rock on the left abutment meant it was unsuitable for this structure. Instead a concrete-faced rockfill was used. At the time, it was known that these types of dam walls leaked—it was a tribute to the Commission's engineers that it didn't. It is estimated that 1.1 million cubic metres of rockfill was used in its construction (Lupton 1999).

Although the Mersey-Forth Power Scheme was officially opened in March 1973, the Forth River was flooded in early 1971 when the Cethana Dam was completed. New lakes, improved road access and scenic routes were established as part of this scheme, and it was common knowledge that the Forth Falls Scenic Reserve was lost. What a lot of Tasmanians did not know was how a small group of landowners lost access to their properties when the Lorinna Bridge was flooded. Lorinna lost its picnic ground and sheds built by volunteer labour on the river's edge. The sad irony is that, despite the massive amounts of electricity that could now be generated for businesses and consumers on the north coast by the construction of Cethana Dam, residents and landowners in the area did not benefit from this development. Despite two power stations located within 5 kilometres and a major powerline nearby there is no electrical power for the area. It is unlikely that it will be made available, as most of the residents now are 'alternative life-stylers' keen on keeping the relatively isolated settlement as it is.

Figure 5: Cethana Dam

The petition

The only way to access 'Lorinna over the bridge' after the creation of Lake Cethana was via Haines Track, built originally for log trucks but never maintained. By 1971, it was a very rough four-wheel drive track. With a petition in 1974 the landowners began to lobby the governments of the time to re-establish access to their properties on a better standard road. After years of negotiation, the Hydro Electric Commission agreed to pay compensation monies of around $60 000 to the Kentish Council to manage the construction of an access road in a better location. Jim Charleston, who had recently purchased one of the properties at 'Lorinna over the bridge', had his own fleet of heavy machinery and volunteered to build a road following the old Dalcoath track using the compensation money from the Commission. Unfortunately the money only allowed him to do the work as far as the present Lemonthyme Lodge site, some 500 metres north of 'Lorinna over the bridge'. The new road followed the old track except for a couple of sections. The landowner immediately to the north of the Lodge erected a gate on his property when he realised the new road was not on the road reserve. The local council became involved because they maintained the

road and claimed it as part of their road system for the purpose of Federal Government grants. They negotiated with the landowner to construct a road to a house site on his property in return for the road sections becoming part of the public road system. This action avoided a potential protracted legal battle for the affected landowners and ensured a major tourist development would be accessible to the tourists. Despite the successes of the petition to re-establish adequate access for 'Lorinna over the bridge', the road condition deteriorated beyond Lemonthyme Lodge due to the lack of maintenance.

In 1996 the current landowners decided to approach North Forest Products, a large woodchipping company, to construct a road and harvest the timber on their properties. The obvious route along Dalcoath Road past the Lodge was discounted early on due to the potential conflict with the major tourist destination. A new road was constructed through the adjoining State forest to the south in early 1998 and harvesting commenced in April 1999 and was completed two years later. Hardwood plantations are currently being established under a long-term agreement with the landowners.

Conclusion

No map or historical record refers to 'Lorinna over the bridge'. There is no official record of that name. The landowners and other local people were the only ones who referred to the area by that name. It was always seen as part of Lorinna with the wooden bridge acting as the link. That was until some 30 years ago when a large scale hydro-electric power scheme intervened and the wooden bridge was flooded, thus delivering a death blow to the area. The broader population and industry of Tasmania were considered the winners of the hydro-electric power scheme but there were also losers. Some of the 'Lorinna over the bridge' landowners showed remarkable resilience and hope by fighting for the right to access their properties. Others gave up and sold their properties. Today access has been restored, not through government assistance, but by a private agreement between all of the current landowners and a timber company. It is the timber, considered worthless by the Crown all those years ago, that has in fact provided the rebirth of 'Lorinna over the bridge'.

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14

Old forests and Tasmania's early national parks movement

Debbie Quarmby

Introduction

The Tasmanian reserve system, like those of the other Australian States, has had the advantage of European settlement beginning at a time when public reserves were an integral part of land use planning. Even the earliest towns were laid out with provision for public spaces—churches, graveyards, schools, hospitals and recreation grounds—which from the mid nineteenth century were formally gazetted as reserves under the *Waste Lands Act 1858* and its successors. The first recreation reserve proclaimed in Tasmania was an area of 42 acres (17 hectares) that was put aside as a place for recreation and amusement of the inhabitants of Honeywood (now Geeveston) in 1861.

There was a legislative framework for reserves and this was reinforced, in the late nineteenth and early twentieth centuries, by the political agenda of social reform that supported the idea of looking after the health and well-being of the working population. The concept of public parks and recreation reserves may have stemmed primarily from the opening of urban parklands to the public in response to democratic uprisings in Europe, but there was no limiting definition placed on the reserve concept, either in terms of the size or purpose of parks, when the idea was transported to the colonies in

America and Australia. In the colonies, where there was so much land that was not seen to be privately owned, there was scope for much bigger reserves, reserves that could provide for recreation combined with the kind of inspiration that can be derived from wild landscapes. There was the potential, too, in a country that had not been cleared for agriculture, to preserve trees and old growth forest, aspects of nature to which people had, and still have, a particular attachment, within public reserves.

This paper focuses on the value placed on wild landscapes and old forests as an important motivation for the creation of early reserves, a motivation that is not often emphasised in the literature. There has been little written about the early Tasmanian national parks movement; what has been written is mostly in theses, notably those of Mosley (1963), Shackel (1968), Castles (1986) and Mendel (1999), none of which specifically addresses the role that people's attachments to forests has played in the national parks movement.

Cultures from which European Tasmanians have descended have strong associations with trees and forests, associations that have been expressed through early religions (Bord 1982), through different facets of Romanticism including art and literature (Worster 1977, Bonyhady 2000), and through the desire to preserve forest in its natural state. Yet, strong as the cultural meanings of trees and forests may be, these meanings are not necessarily rational. Conservationists have used utilitarian arguments more than they may otherwise have done in order to defend forests because they have learnt the value, in political debate, of practical arguments that have economic implications.

Russell Falls Reserve

By the end of the nineteenth century, public land in Tasmania was fast becoming alienated as a result of selection for agricultural and pastoral pursuits, as well as for roads, railways, mining leases and timber reserves to supply timber for railway sleepers, mine construction and building. However, a number of naturalists, inland fishermen, aesthetes, social reformers interested in public health, businessmen and community leaders attuned to tourism wanted to see some accessible beauty spots, which included areas of old forest, set aside as public reserves before they were either bought or destroyed.

Among these people was Louis Manton Shoobridge. Louis was, apparently, first taken to see Russell Falls, then known as 'Brownings Falls', near his property, *Fenton Forest*, by a neighbor, Robert Browning, around 1880. Being a 'great lover of nature who had no greater satisfaction than the

planting of trees and the establishment of gardens' (ADB 1969), Shoobridge recognised the area's potential as a public parkland and sought to have it declared a reserve. By 1885 his efforts had resulted in the declaration of 300 acres (121.5 hectares) at Russell Falls as a scenic reserve, and the start of a government-built access road.

Russell Falls are spectacular, but so too was the surrounding forest. In 1889 Tasmania's second Conservator of Forests, William Brown, inspected the forest in the area of Russell Falls River, with Louis Shoobridge acting as his host and guide. Brown was impressed with what he saw. In his report on the trip, Brown wrote:

> The whole of the country inspected, as far as the eye could reach from an altitude of 2,000 feet on Marriot's Look-out, was one of never-ending forest of magnificent white gum, stringybark, blackwood, myrtle, sassafras, and wattle. The blackwood alone would constitute a valuable one, and it would be a standing reproach to the Colony if some steps were not taken to prevent its ruthless destruction, signs of which have already begun (Brown 1889).

Mt Wellington

Mt Wellington was, from the late eighteenth century, Hobart's most popular tourist attraction. According to Captain Butler Stoney, writing in 1856, 'to ascend this hill is the favorite trip of the stranger, and, though the toil is great, it is more than repaid by the sublimity of the scene' (Stoney 1856). As well as extolling the virtues of a walk to the top of the mountain, he recommended an excursion to Fern Tree Valley which, he said, the stranger would visit 'with much pleasure and interest':

> The curious formation of the fern-tree, its umbrella-like fronds, and its pretty groupings give a very pleasing effect to the valley, which is a favorite resort during the season for picnic parties and merry-makings (Stoney 1856).

A travel guide written a few years later described Mt Wellington as 'the lion of Tasmanian scenery' (Thomas 1870), and a description of a walk in the foothills captures some of the feeling of being immersed in old growth forest:

> A charming confusion of light and shade is there to be seen – shining moss clothing the mouldering boles of prostrate forest giants – lichens luxuriating on every rock, and water-cresses growing on every pool – scintillating gleams of golden sunshine here and there dart through the

> umbrage of the dense foliage like angel visitations from the outer world; silence broken only by the occasional flitter and note of the forest bird or the sigh of the wind, crown of all Sylph and "faeries" only are wanting to make it a true embodiment of one of the scenes from Spencer's Faery Queen (Thomas 1870)

The mountain was a popular destination for locals, some of whom built elaborately decorated timber huts on its forested slopes. Some people were, however, already concerned in the nineteenth century about conservation of the mountain's forest, and ferns, as this was a time of 'fern mania' (Bonyhady 2000). Members of the Royal Society, including Louis Shoobridge's father, Ebernezer, and brother, William, discussed the destruction of tree ferns on the mountain 'in a most wanton and barbarous manner', and subsequently, in 1876, wrote to the Hobart City Corporation about the problem. A few years later, the newly appointed Conservator of Forests, George Perrin, wrote a report on the State Reserve at Mt Wellington in which he too expressed concern about destruction of the mountain's forests, given their environmental and aesthetic importance. He was interested in what he described as cosmical influences of tree masses working silently in the interests of population, writing:

> It will be readily seen that State forests must *not* be left to chance selection; the varied interests at stake are far too grave to trifle with the subject. It is not simply a question of timber supply to a few splitters or a few saw-mill proprietors, nor even a matter of the convenience of the agriculturalist or pastoralist, or the supply of firewood to the town and villages, or the conserving of the water supply of a particular city or locality; but it is when all these wants are taken in the aggregate, together with the peculiar cosmical influences of forests, working in many ways silently, and for the most part unknown to the great majority of people, who see the *effects* produced, but not the *causes*, that the lesser wants of individuals or of localities fade into comparative insignificance when compared with the grave results which are of stupendous importance to the trade, industries and vital condition of the population of a country, and may be averted by rigorous repressive measures in lands where such influences are recognised. (Perrin 1887)

In his Report on the State Reserve on Mount Wellington, Perrin cited views expressed by Henry Dobson, Hobart lawyer and politician, and Chairman of the Royal Society in 1884 when:

> He alluded to the wanton destruction of the tree-ferns at Mount Wellington. Many glens and other locations on the Mountain had

> been utterly robbed of all their beauty and attraction by the stupid destruction of these trees, some of which he had no doubt represented a growth of 50 to 100 years. He was sorry to say, too, that this destruction was permitted by many of whom better things might have been expected, and in very many cases for the mere decoration of a ballroom. Trees were cut down which we could never hope to see replaced in a lifetime (Perrin 1886).

Dobson had said then that something should be done to stop the senseless waste of beauty, at least in the Mountain Reserve that had been set aside as a water catchment, by declaring that area a People's Park and making it illegal to remove ferns and other trees.

The Tasmanian Tourist Association, chaired by Henry Dobson, promoted Mt Wellington to visitors by providing transport to The Springs and organising the construction of tracks and shelter huts. In the 1905-1906 season, 10 320 tourists were driven to The Springs. As a result of the lobbying efforts of the Tasmanian Tourist Association, parliament passed legislation that would enable part of the Mountain Reserve to be proclaimed a National Park. But the Hobart City Corporation, fearing that accommodating tourists and typhoid convalescents there would pollute the water supply, opposed the plan (Archives Office of Tasmania PD1/28). The Corporation won the acrimonious debate that ensued, and the National Park never came about. Dobson and some of his colleagues did secure the lease of a block of land on which they built The Springs Hotel, but the group's aspirations to protect an area of forest on Mt Wellington within a national park for the benefit of the health and enjoyment of those who visited it were not fulfilled.

National Park

By the twentieth century's second decade there had been at least two unsuccessful attempts to establish a national park in Tasmania, at Freycinet in the 1890s, and on Mt Wellington, but park enthusiasts had not given up hope. Around 1910 William Crooke, a retired teacher who had a fishing cottage on the Russell River, began to lobby for a national park at Mt Field. He galvanised a number of other men, most of whom had been involved in the Mt Wellington effort not long before, to join the push for a park that would encompass not only Russell Falls, but some of the surrounding alpine tarns and forests.

Crooke organised a visit to the area for members of parliament and, subsequently, Sir Elliott Lewis who was by then ex-Premier, led a deputation

to the Minister for Lands to promote the national park proposal. Also among the deputation were Crooke, Clive Lord, Henry Dobson, Leonard Rodway, Louis Shoobridge and Colonal Legge, representing the Tourist Association, Australian Natives Association, Forest League and Field Naturalists' Club. To promote the park proposal they argued in favor of the area's magificent scenery, the fact that it was generally 'waste land', of no economic value other than for tourism, and the revenue that visitors would generate for the Railways Department. But Henry Dobson did risk jeopardizing the 'worthless land' argument by saying that the area had the most beautiful fern and forest scenery in Tasmania, and Louis Shoobridge risked jeopardising it even further by commenting that the region's fine timber really should be preserved (*Daily Post* 2 October 1913).

By the end of 1913 the government had agreed to a reservation of 5000 acres (2023 hectares) and a vote of £500 for the Park and £500 for the Forestry Department which was to manage it as a recreation reserve had been conceded. A change of government, however, gave park proponents an opportunity to do better, and they did; a 27 000 acre (10 927 hectare) reserve was finally proclaimed by the Labor government in 1915. The park at Mt Field was opened at a public ceremony come picnic day in October 1917. The official speakers stressed the park's value as a tourist asset. Even Henry Dobson, speaking on behalf of the newly established National Park Board, emphasized the park's role in promoting tourism (*Mercury* 15 October 1917).

William Crooke was given a minor role in the ceremony, that of seconding Leonard Rodway's vote of thanks to the Governor. He was a man who spoke his mind whether or not what he had to say was politically popular at the time, and he alienated people in doing so. He believed strongly in nature preservation for its own sake, and refused to spout tourism as a reason to justify it. Despite his colleagues' attempts to keep him under control at the opening ceremony, he managed an opportunity to challenge the others' emphasis on tourism, saying:

> The idea of the Park was not originally conceived for tourists. Only by preserving the Park in this way would the people of Tasmania in the far future be able to see what primeval Tasmania was like. That was one of the objects. Another was the preservation of the native flora and fauna, and still another, the recreation of the people of Tasmania. The tourists, to his mind, came last ... (*Mercury* 15 October 1917).

While Crooke may have voiced a minority opinion, he was not alone. Commenting on the park's opening, the editor of Hobart's newpaper *The Mercury* echoed Crooke's sentiments, writing:

> The only creature to be driven out of the Park and kept out with flaming swords is the Utilitarian, who would indiscriminately chop trees, spoil waterfalls, dig up rare plants, kill live things, and spoil and ravage everything for money profit. If there ever come to exist legislators who cannot see the value of such a place we hope it will become a recognised custom to shoot them on sight whenever seen within three miles of the Park (*Mercury* 15 October 1917).

Special legislation, the *Scenery Preservation Act 1915*, was established as a framework in which the National Park was to be managed. The legislation provided for a body, the Scenery Preservation Board, under the jurisdiction of the Lands Department to administer the Act, and for the creation of subsidiary boards, such as the National Park Board and, later, the Cradle Mountain Reserve Board, to administer specific reserves. With very limited finances, especially during Depression years, and a moribund structure in the case of the Scenery Preservation Board, the boards settled into a pattern of being less active in matters of nature preservation than might have been hoped, and focused on administrative details rather than impressive policy innovation. Nevertheless, the subsidiary boards in particular, with the help of enthusiastic voluntary effort, did achieve a considerable amount in terms of developing facilities such as huts and tracks within the reserves.

Cradle Mountain Reserve

There were a few occasions when members of the boards under the *Scenery Preservation Act 1915* took a stand on environmental issues, notably on issues relating to forest conservation. Not surprisingly, a conflict over logging arose in the wake of the Second World War, a time when there was big demand for timber and strong pressure promoting the strategic and economic benefits of logging. The conflict, an internal one, arose over Ronald Smith's intention to extract King Billy pine from his land near the reserve at Cradle Mountain (Haygarth 1998). The impetus for the reserve had come largely from two men, Gustav Weindorfer and Major Ronald Smith, both of whom had purchased blocks of land adjoining it. Neither Weindorfer nor Smith had ruled out the possibility of selling King Billy pine from their land. But selling the timber depended on good access, and Weindorfer died before the road to Cradle Mountain was completed to a standard that would allow for timber carting.

Ronald Smith, more than any other person, was responsible for the lobbying that resulted in the Cradle Mountain road being built. He had been in contact with timber contractors interested in purchasing his pine for some

time, but correspondence he had with them indicates that, though he was tempted to sell the timber, he was responsive to pressure from his colleagues in the parks movement not to. At the very least, it would have been seen as inappropriate to use the road that had been funded as a tourist asset for the purpose of extracting his timber. Nevertheless, when King Billy pine came into demand for defense purposes during the Second World War, he went ahead with negotiations. By that time Weindorfer's block had been bought by a group of people who wanted to preserve the pine on it and there was strong opposition to Smith's plans from within the parks movement and the Cradle Mountain Board. The conflict that ensued ran deep enough for Smith, who had been a pillar of the Cradle Mountain Reserve Board to be ostracised and given little choice other than offering to resign. The issue brought underlying tensions between 'preservationists' and 'wise use' approaches to conservation to the surface and created a major rift within the membership of the Board. Smith, however, was unrepentant and not blind to an element of hypocrisy shown by his opposition. In a letter to his friend, and Chair of the Cradle Mountain Board, Fred Smithies, he wrote:

> I would like you to make it clear at the Scenery Preservation Board meeting that personally I am not in favor of stopping the exploitation of timber on private property or Crown Land outside the Reserve ...
>
> Perhaps it would be opportune while dealing with the subject to discuss the question of the justification or otherwise of establishing Hydro Electric works in or near the Reserve. Great damage has been done to the vegetation around Lake St Clair, and more damage to vegetation and some beauty may be done on the Reserve by future work if allowed. I myself think it is justifiable if it is for the good of the Country, but it is a debatable subject, and it would be interesting to discuss it. (Smith 1944)

Florentine Valley

Forest management practices throughout the State were being scrutinised in the early 1940s. There had been talk of a need for more sustainable forest management since the nineteenth century, and the increased demand for timber products during and immediately after the Second World War heightened concern. The Tasmanian Government commissioned the Commonwealth Timber Controller, Stephen Kessell, to enquire into the State's forests and forest administration, and he identified major problems, including the pulp and paper industry's access to timber of sawing quality,

and low royalties resulting in a lack of funds for adequate reforestation (Kessell 1944).

Not long after Kessell's report was released, Australian Newsprint Mills approached the Premier about working the forest on the Field West slopes, in the area known as the Florentine, forest that was believed to be within the National Park. The newsprint company, arguing that the forest was of little value to the park because of poor accessibility, proposed that the park boundaries be altered to allow for a transfer of 7800 acres (3157 ha) of first class virgin forest to its timber concession area, in exchange for 9000 acres (3642 ha) of second and third class eucalypt forest and button-grass country adjoining the park. Park supporters, however, saw a value in preserving that forest for reasons that went beyond whether or not there was good public access to it, and they fought for it (see also Keirnan, this volume).

Members of the National Park Board recognised that the forest's remoteness would help in preserving it in its virgin state for future generations, and they knew that nowhere else in the park was there forest of equal richness and growth. On the grounds that; 'the National Park Board is responsible for the care and preservation of the Park as defined by existing boundaries and would be failing in its trust if it agreed to this request or allowed 7800 acres to be excluded from the park area without strenuous protest' (National Park Board Minutes, 30 October 1946), the National Park Board, with the support of its parent body the Scenery Preservation Board, stood firm. It rejected Australian Newsprint Mill's initial exchange proposal in 1946, then a second variation on the exchange theme, in 1947, as well as a third, in 1948. By this time the company was headed by Stephen Kessell, who was well aware of the State Governments's generosity in providing the company's concession arrangements and of the long-term costs of those arrangements to the State's forest resources.

In response to the threat to the Florentine forest, people who knew and cared about what was at stake worked together in what was possibly Australia's first major political conflict over a conservation issue. Walkers visited the Florentine, accessing it from Mount Field West. They knew how magnificent the forest was with trees around 320 feet (97.6 m) in height, one of the last remaining pure stands of *Eucalyptus regnans* in Tasmania. But it was difficult for conservationists to put forward an effective argument against the company's claim, difficult to put feelings into words that would count with people who were focussed on money and commercial gain. Conservation was hardly arguable given the general lack of environmental awareness of the time. The conservationists had never taken on the combined forces of

industry and government before and they faced a steep learning curve, with little time at their disposal and very powerful opposition.

Nevertheless, conservationists sustained their effort through parliamentary enquiries into the issue, despite the odds against them. They wrote submissions and gave evidence in support of retaining the forest within the National Park. They put forward arguments about the forest's scientific value, its scenic value and about the danger inherent in the precedent of allowing the national park boundaries to be altered at Australian Newsprint Mill's request.

The conservationists were disadvantaged by the fact that the government restricted its deliberations to determination of the park boundary, and whether or not this meant the forest in question was actually within the park. Facing opposition from the newsprint company, government, the media and the icon of hydro industrialisation, the odds were too great for the conservation cause and, not surprisingly, the boundary issue was decided in favor of the company. By restricting the parliamentary inquiry's terms of reference to the boundary issue, the government had rendered conservation arguments irrelevant.

The Florentine was lost, but the conservationists' battle was not over. Saddened by the fate of so beautiful a forest, and disillusioned by the evidence of corruption, abuse of political power, government secrecy and the lack of respect that was shown to the conservation side of debate about a public resource, conservationists formed the Tasmanian Fauna and Flora Conservation Committee (Borschmann 1994). From that time on, the Tasmanian conservation cause had an increasingly effective voice.

Conclusion

Tasmanian conservationists have, since the 1870s, endeavored to preserve old growth forest within reserves. Why it has been important enough that people have gone to the efforts that they have done is not clear, however, because sometimes reasons are not recorded, and when reasons are recorded they often appear to reflect political pragmatism as much as actual motivation. Conservationists' reasons would, in part at least, relate to aesthetics and to practical, or scientific concerns. Trees also have the status of sacred objects in a number of cultures, though in the European cultures from which Australian settlers descended this was more so in ancient rather than more modern history.

During the eighteenth century, just prior to European settlement in Australia, the English essayist Joseph Addison pronounced that, 'the love of

woods seems to be a passion implanted in our natures', and the Scottish minister Archibald Alison declared, 'one of the sublimest objects in natural scenery is an old deep wood, covering the side of a mountain' (Thomas 1983). Between 1770 and 1850, not long before the effort to protect forested slopes on Mount Wellington, 'books on handsome trees, famous trees, ancient trees poured off the press' (Marsden quoted in Thomas 1983), and the beauty of trees was, apparently, a favorite topic of conversation among English gentlemen. These new sensibilities, or perhaps old sensibilities rediscovered, generated a feeling that:

> it was impossible to behold the destruction of an aged tree without a strong sentiment of regret, 'it appears a violation of nature, in the exercise of too arbitrary a right' (*ibid*).

Sentimentality about trees, fostering strong desires to protect outstanding trees and forests, has been a factor in the history of Tasmania's national parks since the beginning of the national parks movement. Glimpses of it emerge in early descriptions of walks on Mount Wellington; in reports written by the Conservator of Forests; in the words of the newspaper editor on the occasion of the opening of the National Park at Mt Field, and in comments made by some of the people who fought to save the Florentine forest. But the nature of the sentiments has been difficult to articulate in orthodox terms and very difficult to weigh against utilitarian arguments in favor of exploiting forests.

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15

Conservation, timber and perceived values at Mt Field, Tasmania

Kevin Kiernan

Introduction

Mt Field is a small mountain plateau the highest point of which, Mt Field West (1434 metres), overlooks a production forest in the Florentine Valley that today isolates it from the Tasmanian Wilderness World Heritage Area. While biodiversity has become the driving force in contemporary nature conservation, it was the scenic values of a landform, Russell Falls, now a Tasmanian tourism icon, that first triggered conservation initiatives in this part of Tasmania. This involved the first reservation of land for conservation purposes in Tasmania, 13 years after the declaration of the world's first national park at Yellowstone, USA. Three decades later, a larger national park was established at Mt Field, again the first in Tasmania. But subsequent revocation of part of the park to allow logging meant that rather than preserving the area for future generations it was not to survive intact for even a single human generation. This paper traces the history of Mt Field National Park and considers how perceptions of the area have impinged on the conservation of its natural values, including its important regions with underground drainage, or 'karst' landforms, such as caves. It also explores some wider impacts of events at Mt Field upon conservation in Tasmania.

In his review of the changing nature of federal-state relations in Australian forestry, Carron (1993) suggested that the bitterness that the flooding of Lake Pedder for hydro-electric development stimulated in conservation-minded people 'was to be at the heart of the conservation war that was there and then declared'. But what role might the earlier Mt Field controversy have played?

Scenery, recreation and tourism were pre-eminent in early perceptions of Mt Field. This early focus on these instrumental values contrasts with today's promotion which stresses its role as host to a number of important ecosystems: 13 rare plant species, a nationally rare marsupial, four invertebrate species listed as rare, threatened or vulnerable at the State level, and wet schlerophyll forest, subalpine and alpine plant communities of high conservation value. Today Mt Field is also acknowledged for its cultural heritage significance, containing both Aboriginal sites and historical European sites and structures. Its runoff supplies nearly 20 per cent of Hobart's water and the needs of all settlements between the park and the city.

Geology and climate underpin all these values. A sheet of dolerite rock caps the plateau upon which glaciers that formed in colder Pleistocene times left ice-abraded slopes, lakes and moraines that have been colonised by vegetation and wildlife. Sedimentary rocks form cliffs around the plateau margins including those over which Russell Falls and several other notable cascades tumble. Perhaps the most remarkable waterfalls of Mt Field National Park are the least known: they vanish mysteriously into forbidding natural shafts in the earth. Limestone that occurs along the western and southeastern margins of the park is riven by some of the deepest cave systems in Australia, part of an intriguing complex of karst landforms—the hidden heritage of Mt Field.

Evolution of the National Park

Located at the extreme eastern end of what is now Mt Field National Park and first sighted by Europeans around 1856, Russell Falls soon attracted scientific parties guided by the Rayner and Clark families from nearby Ellendale. Subsequently, a local agriculturalist, Louis Shoobridge, commenced lobbying for protection. The initial reserve of 121 hectares was proclaimed as Falls Reserve in 1885 under the *Waste Lands Act* 1863, but this legislation provided no more protection than withdrawing land from potential sale or lease. The area grew in popularity, trout were released into its mountain lakes by the late nineteenth century, a railway reached the area by the early 1900s, and skiing and skating became popular by the 1920s.

Strong advocacy by W.C. Crooke played a significant role in establishing Mt Field National Park, although he was apparently reticent about asking for a large area lest the proposal be rejected entirely. In 1912 he founded a National Park Association, comprising representatives of the Tasmanian Field Naturalists Club, University of Tasmania, Hobart City Council, Fisheries Commission, New Norfolk Council, and the Australian Natives Association. Crooke's principal concern appears to have been to protect the natural character and recreational values of the area. His colleagues, Henry Dobson and E.T. Emmett, focused more on tourism potential, while other advocates stressed the area's scientific values, including the Government Botanist, Leonard Rodway, Tasmanian Museum curator, Clive Lord, and University of Tasmania zoology professor, T. Thomson Flynn, father of the film star Errol.

In 1913 Crooke spearheaded protests against timber felling in the Falls Reserve by the Public Works Department, an activity that highlighted the insecurity of the existing reserve. In response to National Parks Association lobbying the Minister for Lands, Hon. E. Mulcahy, agreed to the reservation of 5000 acres (2024 ha). Such a small area was considered entirely inadequate by the conservation advocates. A change in government facilitated further lobbying that led to an agreement in 1915 by the new Minister, Hon. J. Belton, to reserve 27 000 acres (10 931 ha) covering Russell and Lady Barron falls and most of the Mt Field ranges (Lord 1918, Luckman 1953, 2001). This reserve was proclaimed under the *Crown Lands Act* 1911 (9 March 1915) as National Park Reserve, being gazetted simultaneously with Freycinet Peninsula on Tasmania's east coast to constitute Tasmania's first national parks.

The *Scenery Preservation Act* 1915 established a new reserve system and a Scenery Preservation Board, structured such as to give dominance to representatives of developmental agencies, that was charged with making recommendations on land reservation. National Park Reserve was revoked and simultaneously re-proclaimed under this legislation, again as National Park Reserve (29 August 1916). On 26 January 1917 it was vested in a National Park Board, the structure of which still reflected the predominance of economic imperatives, particularly tourism and water supply.

Just 1500 metres south of Mt Field National Park lies Junee Cave, source of the Junee River (a tributary of the Tyenna River) and probably first seen by Europeans around 1890. The conservation significance of caves was well-recognised at the time, Australia's first national park-type reserve, of 5000 acres (2024 ha) having been established around Jenolan Caves (NSW) in 1866, and formal reserves proclaimed to protect caves in northern Tasmania

in the 1890s. A small area (20 ha) around the entrance to Junee Cave was for many decades indicated on county charts as 'reserved land' though from what date is uncertain (Kiernan 1974). In correspondence with the renowned NSW government cave explorer, Oliver Trickett, in 1917, the Tasmanian Government geologist, W.H. Twelvetrees, erroneously indicated that Junee Cave lay 'in National Park reserve' (Twelvetrees 1917), although the wording is slightly ambiguous. This raises the possibility that a disjunct part of the intended park may have slipped from the final proclamation. By this time the probability was recognised that the main headwaters of the underground Junee River lay 9-10 kilometres distant in the Florentine Valley below Mt Field West. In his correspondence with Trickett, Twelvetrees also referred to these 'Mt Field Caves on Mt Field West (Mt Humboldt) ... on the reserve recently created for a national park' (Twelvetrees 1917, Middleton 1991).

Further proclamations under the *Scenery Preservation Act* extended the park to 15 583 hectares (18 February 1919), then 16 690 hectares (10 June 1930), then 17 028 hectares (29 May 1940). An area below Mt Field West preserved a small sample of the *Eucalyptus regnans* forest of the Florentine Valley. It was from this valley that most of the thylacines exhibited in the old Hobart zoo were later captured, most recently in 1933, further sightings in this area being reported as recently as 1952 and 1980 (Sharland 1962, Smith 1981). But it was the old-growth forest rather than this charismatic carnivore that underpinned reservation here. National Park Reserve was renamed Mt Field National Park in 1947. Its reconstituted National Park Board still reflected the predominantly utilitarian aspirations of government.

In officially opening the National Park on 13 October 1917, Governor Newdegate noted one of its important attributes was that it contained some of the finest timber in Tasmania. Both his remarks and the afternoon's entertainment—woodchopping events—were to prove prophetic. Government aspirations for economic development west of Mt Field saw track construction and futile attempts at pastoral settlement from the 1850s until after World War II (Kostoglou 1996). With Parliament's approval, the Government granted a forest concession over 124 000 hectares in the Florentine Valley in 1932 that enabled Australian Newsprint Mills Pty Ltd to open the country's first newsprint mill near Hobart in 1941. Subsequently, the company made several attempts to secure access to the national park forest beneath Mt Field West that had been specifically excluded from the original concession. After an attempt in 1946 to have the park boundary changed failed for legal reasons, the company proposed to compensate the park with alternative areas from the company's concession. Australian

Newspring Mills, in correspondence to the Premier (2 January 1948), asserted that the area below Mt Field West contained 'faulty trees' that would 'warrant only a salvage operation', but that as:

> an integral part of the high forest of the Florentine Valley [they] should be worked, regenerated and fire-protected as such. In view of...the important part this belt of forest...which is partly within and partly outside of the existing boundary of the National Park...will play in maintaining log supplies...the company is prepared to undertake this work (Kessell 1948).

Resulting public debate bore many hallmarks of later Australian conservation disputes. A submission by the Australian Natives Association to a subsequent Parliamentary inquiry usefully summarises conservationist objections: opposition to any park alienation to permit commercial encroachment; a claim the forest was the only one of its type in any Tasmanian national park; its potential value as a tourist attraction; disputation of the alleged quality of the forest in the proposed compensation area; and concern that revocation might prove the thin edge of a wedge that would allow logging in other parks (Peterson 1949). The company and Government attempted to stampede a favourable decision by claiming that if Australian Newsprint Mills did not gain access to the park timber it would have to close its mill. The development lobby consistently sought to belittle the conservation value of the revocation area and to inflate the conservation value of the proposed compensation area. There was considerable concern that backroom deals included promises to the company which the Government was desperate to honour. Immediately after the 1948 State elections, the debate took a new tack when development proponents and the Government suggested that doubt existed as to the true position of the park boundary. This was notwithstanding protestations by the Australian Natives Association that six maps printed by the Government since the park was proclaimed all clearly showed the disputed forests to be well inside the park. A Parliamentary committee inquiring into the revocation proposal became side-tracked by this boundary issue and defined an entirely new boundary, although providing no justification for it. However, when the Government subsequently took legislation to Parliament, the preamble to the *National Park and Florentine Valley Bill* 1949 acknowledged the reality that it provided for 'transfer of a certain area of Mt Field National Park' to the company.

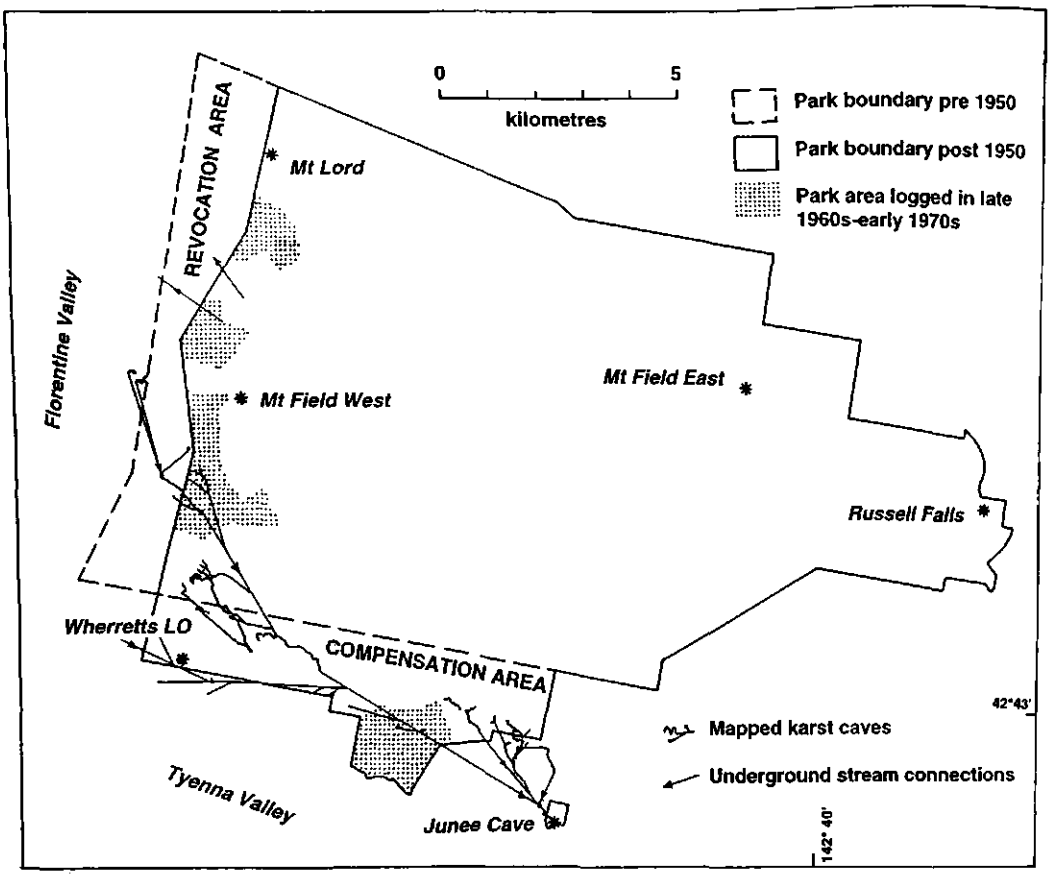

Figure 1: National Park boundary changes and sites of later salvage logging within Mt Field National Park, in relation to karst cave complexes.

The *National Park and Florentine Valley Act* 1950 that eventuated revoked from the park the 1490 hectares of the Florentine forest below Mt Field West (Figure 1). As compensation, 1640 hectares of mixed forest was added to the southern margin of Mt Field National Park and possible increases in the annual grant to the Scenery Preservation Board were suggested (Luckman 1953, Tappere 1985). Subsequent minor changes to the park included compulsory acquisition of 10 hectares under the *Lands Resumption Act* 1910 (3 May 1950), substitution of an equivalent area under the *Scenery Preservation Act* 1915 (on 26 June 1950) and the addition of 1 hectare at the park entrance (on 1 November 1970). With passage of the *National Parks and Wildlife Act* 1970 the area became a State Reserve, still known as Mt Field National Park. Later additions included 45 hectares on the south side of Lady Barron Creek (on 18 May 1977) and 8 hectares near Russell Falls (26 September 1990). The total of the areas gazetted suggest that the current extent of Mt Field National Park is 17 242 hectares, but a computer recalculation in 1990 found its true area to be 15 881 hectares (Parks and

Wildlife Service 2000). The informal Junee Cave reserve was also re-designated as a State Reserve (on 8 September 1976), albeit still protecting only the outflow point of this extensive underground river rather than the extraordinary cave system through which it flows.

Consequences of revocation for protecting natural values

The most obvious consequence of park revocation for natural values was progressive loss of the Mt Field West forests. Logging required construction of an extensive road network and considerable disturbance of soils, watercourses and biota previously included in the park. Such argument on natural values as had arisen over the boundary controversy had focussed upon the forests and other park values that would feel the brunt of development were given little account. But it is interesting to note that press reports of Parliamentary debates, and representations by the Government, the Forestry Commission and the company all stressed the potential for new caves to be discovered in the area it was proposed to add to the park in compensation for the area to be revoked below Mt Field West. Yet they conspicuously failed to acknowledge the presence of caves in the area to be revoked which Twelvetrees correspondence to Trickett indicates had been known about in Government circles for at least two decades (Twelvetrees 1917).

In 1946 the Tasmanian Caverneering Club had visited Junee Cave on its first official outing, penetrating only a short distance before being thwarted by a water-filled passage that continues to challenge cave divers today. But over subsequent decades many tributary caves have been explored, involving the establishment of successive Australian cave depth records as explorers penetrated further into this extraordinary underground system. The Junee-Florentine caves, which evolved partly in response to torrential discharge of glacier meltwaters, offer insights into natural climate change and have since also revealed relicts left by ice-age humans, bones of extinct ice-age megafauna, and invertebrate fauna adapted to the perpetual darkness and found nowhere else on Earth (Goede and Harmon 1983, Cosgrove 1989, Eberhard 1998, Kiernan et al. 2001). The dissolving of limestone by waters that descend from the plateau and are acidified within the forest soils by biologically-produced carbon dioxide is a critical natural process in these caves which are sensitive environments that are highly susceptible to land management practices. Retention of the forest and soil cover, and catchment

stability, together with proper management of recreational impacts, are key requirements for protection of this remarkable underground heritage.

Logging that followed the revocation of the Mt Field West forests occurred at a time when the presence of caves in the general area was well known but documentation remained very deficient and there was little understanding of their value or sensitivity. Road construction, timber felling and extraction practices saw serious soil erosion including scalping of vulnerable karst soils that control the chemistry and release of critical natural seepage to caves. Debris was dumped into sinkholes that fed water underground, causing sedimentation of underground streams. In 1976 consultants reporting upon another matter made incidental mention of logging having caused deposition of over 1 metre of sediment in one cave below Mt Field West, blocking access into it (Richards and Ollier 1976).

New caves were found in the area revoked, both within the Junee catchment and further north. The Welcome Stranger Cave (discovered 1969) is a highly decorated stream cave over a kilometre long. The new park boundary left one-half of this cave in Mt Field National Park and the other half in production forest, which was then clear-felled. Dehydration and consequent physical degradation of the previously sparkling flowstones in the cave followed logging, probably due to increased water uptake by the dense regrowth scrub. Several significant caves have since been discovered in the area added to the southern side of the park to compensate for the revocation, but because disturbance at the upstream extremity of a river cave system enables environmental damage to be transmitted downstream through the entire system, disturbance of the area under Mt Field West was the worst possible scenario for the Junee River system. Moreover, even the caves in the compensation area were now to feel direct onslaught.

Wildfires occurred in the Russell Falls area in the 1890s and in 1934. In 1949 Premier Cosgrove asserted that the proposed revocation area had never been accessible to visitors and that 'the only access would be through the road the company was to construct and, because of fire risk, picnic parties could not use it' (*The Mercury*, 3 February 1949). He expressed a markedly different view of the compensation area: 'It is an area which can be protected from fire by the combined efforts of rangers and the company's fire patrols' (*The Mercury*, 22 March 1949). But notwithstanding such convenient assurances, a fire caused major damage in 1960. Its origin is contentious, but may have been in the logging concession. It burnt out a substantial area in and adjacent to the Humboldt Valley and much of the compensation area which, during his 1948 lobbying, the Forestry Commissioner had told the Premier should and could be protected for all time. Then

in 1966 further intense fires that originated as management burns in the Australian Newsprint Mills concession caused major damage to other parts of the park, including destroying the slow-growing, fire-sensitive, high-altitude vegetation on Tarn Shelf in the central part of Mt Field National Park, so valued by early park advocates such as Rodway—damage that may take a millenium or more to heal. Large areas of forest overlying karst were also burned.

Forest vegetation at lower altitudes had formerly maintained the stability of steep slopes through the binding action of tree roots and the reduction in soil pore water pressures by transpiration. After the fires, landslides began to occur on some steeper slopes around the Mt Field Plateau as the roots of fire-killed trees rotted out, and still longer-term changes in slope stability were triggered. Massive volumes of sediment flooded into some cave streamsinks to the detriment of water quality, underground aquatic ecosystems and cave scenery. The great clarity of the stream in Welcome Stranger Cave had initially been celebrated, but a major landslide now occurred inside the park where forest had been killed by the fire lit by Australian Newsprint Mills that escaped from its logging concession. The landslide reached the streamsink that feeds Welcome Stranger so that the cave stream still often runs turbidly nearly two decades later, and considerable silt has been deposited through the cave (Kiernan et al. 1993). Another major landslide over a kilometre long plummeted from a burnt-out area in the compensation area on Wherretts Lookout. At least one karst streamsink was buried entirely and the river emerging from Junee Cave more than seven kilometres distant ran heavily turbid.

Logging inside the remaining National Park

So much for the revocation and its aftermath, but a less well-known phase of logging deep inside some areas that remained national park was to follow, unleashing a new wave of impacts. In 1966 a Forestry Commission report suggested that salvaging the trees in Mt Field National Park killed by escaped Australian Newsprint Mills fires would probably not benefit regeneration and would increase the fire hazard considerably for at least 10 years afterwards, although the magnitude of that hazard could be reduced by burning after logging (Gilbert 1966). But on Black Tuesday, 7 February 1967, bushfires elsewhere in southern Tasmania killed 62 people and destroyed over 1300 homes, profoundly sensitising the population with regard to issues of fire hazard. Less than a fortnight after the Black Tuesday fires, Forestry

Commissioner Crane wrote to the Scenery Preservation Board to convey an Australian Newsprint Mills suggestion:

> that it could be of advantage to the Scenery Preservation Board if salvage operations were extended to include the burnt timber in the park...it was agreed that the following proposals should be submitted to your Board (Crane 1967).

The Mt Field National Park Board concurred and correspondence to at least one company confirms that one of its aims was 'to reduce future fire hazards in the park' (Scenery Preservation Board 1967). Three other companies that expressed interest during March 1967 were informed that Australian Newsprint Mills had already been given the task. The Mt Field National Park Board indicated to the Scenery Preservation Board (on 7 April 1967) that the work should be completed within three years. The first permit for salvage logging was issued by the Scenery Preservation Board on 14 August 1967. The company was required to fall all trees not suitable for converting into timber or pulpwood, and to prepare the ground for natural regeneration of eucalypt, and, where necessary, promote regeneration by seed sowing (Figure 1).

The Mt Field National Park Board, starved of funds to manage the park, also saw the opportunity to direct royalties from salvage logging towards upgrading its fire-fighting capacity. A memorandum dated 13 February 1975 by B.S. Simmonds, Executive Officer of the National Parks and Wildlife Service (which replaced the Scenery Preservation Board following new legislation enacted in 1970), confirms 'one object was to use royalties for park work' (Simmonds 1975). But actually getting the money proved more difficult. The Scenery Preservation Board Chairman wrote hopefully to his Minister on 21 August 1967: 'Recently, on the recommendation of the Board, you have accepted the Company's offer to help repair the damage to the Park caused by the fires lit by the Company in March 1966...' (Miles 1967). But when the anticipated royalties could not be obtained under Scenery Preservation Board provisions, a special grant was requested. Minister for Lands and Works, Cashion, wrote on 4 September 1967 to the Premier and State Treasurer, Reece, who replied two days later:

> In determining the amount of the annual contribution to be made to the Board, regard was had to its needs in relation to the overall financial position of the State. I see no reason, therefore, why the amount of $30 000 to be received in royalties from the sale of timber should be made available to the Board in addition to the amounts which it will receive by appropriation from its own revenues (Reece 1967).

Simmonds (1975) confirms the objective of securing funds for park work 'was nullified as the revenue was required to be paid to Consolidated Revenue (S17(5), *Scenery Preservation Act* 1915)'. Thus the Board was effectively dudded, and the promised fruits of accession to an intrusion that caused gross and lasting disturbance were never returned. It might have been a very dangerous precedent nevertheless, tempting other sales of reserved lands by park boards similarly starved of funds by disinterested governments, in a bid to raise sufficient money to manage the residual areas.

A covering letter from Scenery Preservation Board Chairman Miles forwarded with the logging permit had specified the salvage logging be completed in three years, and this time frame was repeated in the ministerial approval given in July 1967 (Simmonds 1975). When the first permit expired on 31 July 1968, Forestry Commissioner Crane gave the company a further authorisation. On 28 April 1977 Parks Minister Batt indicated to a constituent, who expressed concern at the extent of disturbance inside the park, that logging was conducted from 1969-1972 and aerial and hand seeding in selected areas undertaken from 1971-1973 (Batt 1977). However, National Parks and Wildlife Service files indicate logging continued until 1974. Simmonds (1975) recommended that: 'no further logging, clear felling or other timber salvage work be permitted within the Park and Australian Newsprint Mills and Forestry Commission be formally advised of this decision'.

Impacts on values

As a consequence of the salvage logging, the impacts of road construction and logging, management fires and slope destabilisation were extended to additional areas. Major visual impacts resulted and the karst and its catchment further disturbed, including some of the most sensitive parts of the karst where headwater streams draining the mountains first encountered the limestone and, hence, where cave development was most pronounced.

Predictably, many new caves were discovered as the forests were levelled. Tassy Pot, located inside the park boundary, became for some years the deepest cave known in Australia. Its exploration was made extremely hazardous by loose boulders and logging debris that had been bulldozed into the entrance and which plummeted unpredictably down the 50 metre entrance shaft whenever disturbed by the movement of the ropes and flexible ladders used by cavers to descend or ascend (Kiernan 1999). Other reported impacts of road construction, logging and fires included physical

damage to caves by blasting, soil erosion, landslips, cave stream siltation, and failed regeneration of forest.

Simmonds (1975) recommended measures to encourage revegetation of disturbed areas and disperse road drainage:

> Problems are encountered on the higher elevations and over limestone outcrops where eucalypts are either slow or impossible to re-establish, and in these areas it seems preferable to sow mixed native species as may occur in similar situations to 'cover the scars' of logging.

But Parks Minister Batt's 1977 letter to his constituent suggests there was no seeding or planting after 1973. Notwithstanding the obvious impacts of the roads, Batt advised: 'at this stage there has been no action on the logging roads' using as an excuse 'they could be useful fire trails and access in the event of future outbreaks'. A later recommendation by a park ranger that the company be requested to close the roads at the park boundary (Eden 1977) also appears to have borne no fruit. These areas remain sources of sediment input to the karst even today. The potentially ongoing implications of changes to karst water circulation caused by logging were highlighted in the early 1990s when sinkholes engulfed roads built towards the compensation area during salvage logging in the late 1960s.

Management through the1980s and 1990s

The salvage logging of the 1960s and 1970s did not end incursions into the park, much of its boundary remaining unmarked on the ground. In 1992 forestry operations penetrated to within a stone's throw of Russell Falls. Meanwhile, a new threat arose. Caves are often delicate environments where natural repair of visitor impacts occurs over geological rather than human time scales, where every broken stalactite and inadvertent muddy footprint on a crystalline flowstone floor is effectively permanent. Opening of many logging roads to public access during the 1990s allowed inexperienced cavers and casual visitors easy access to hundreds of caves. This would be a management nightmare for any Parks Service starved of sufficient funds to respond effectively, but many of these caves lie in State forest administered not by a conservation agency but by a development-focused corporation that has no cave management expertise. Most of those who remember the pristine beauty of the virgin Welcome Stranger Cave now prefer their memories to re-visiting a cave that has been rendered a shadow of its former

splendour, due not to the fault of any particular agency or individuals but to deficiencies in the management system or, more accurately, the lack of one.

Greater recognition of the need for careful management of karst forests emerged following a 1984 study of the National Estate-listed Mole Creek area in northern Tasmania (Kiernan 1984). This had some positive spinoffs in the *Tasmanian Woodchip Exports Commonwealth/State Memorandum of Understanding* (1988), but that Memorandum also declared that 'On the basis of advice from the Heritage Commission, Forest Operations can be carried out without adversely affecting the National Estate significance of the... Florentine Valley Caves'. A subsequent proposal to investigate problems associated with management of karst systems that extend beneath arbitrary land tenure boundaries such as those around Mt Field foundered after failing to receive essential Commonwealth funding. The Australasian Cave and Karst Management Association, the regional professional body of karst managers, recommended at its 1991 conference that the Junee-Florentine karst system simply be included in the park. Despite the advent of new forest practices legislation and special provisions for karst it was not until 1993 that funding became available to initiate an inventory of the Junee-Florentine karst (Eberhard 1998). Considerable further damage occurred in the interim (Kiernan et al. 1993) and the level of inventory achievable with the funding available, while very valuable, proved inadequate for detailed planning of forest operations.

Some informal planning and reservation decisions followed the karst inventory but karst was not included among the nationally-agreed criteria for the establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (JANIS Reserve Criteria). Hence, no secure karst reserves were established in the 1996-1997 Tasmanian Regional Forest Agreement process. Although patently incomplete in scope, the Regional Forest Agreement has been promoted by some parties as being the last word on Tasmanian conservation, an imprimatur writ in stone. Some conservationists argue that stone had better be as soluble as the limestone in which the Junee-Florentine caves have formed, because some measure of recompense for the damage inflicted upon this important karst remains long overdue, together with meaningful rehabilitation initiatives.

Discussion

When opening Mt Field National Park in 1917 Governor Newdegate predicted that:

> the park will be a thing of beauty and a joy forever [and that] By this reservation a typical example of Tasmania's forest will be retained in its natural state, in order that generations yet unborn may see for themselves what virgin Tasmania was like (Parks and Wildlife Service 2000).

That his vision might not be fulfilled was vigorously resisted. Yet it is the campaign against drowning of Lake Pedder for hydro-electric development rather than the overlooked Mt Field revocation controversy that is often cited as the birth of Tasmanian or even Australian conservation activism (Pybus 1990). In his analysis of decision-making prior to the Pedder development, McKenry (1972) argued that ill-feeling was generated by the fact that the powerful agency responsible viewed the development as in the best interests of the state, presented its proposals in such a way as to give a misleading picture of environmental effects, and misrepresented the value of Lake Pedder in its natural state, albeit perhaps due to a lack of understanding of non-technical matters rather than to intentional deception. This implies that narrow agency values and goals were construed as the only legitimate ones. But in these respects there are striking parallels in the role played by the Forestry Commission during the bitter Mt Field revocation debate.

Although much of the motivation for conservationist opposition to the Mt Field revocation appears to have involved concern over a dangerous precedent being set, it was not events at Mt Field National Park that set that precedent: it had already been established seven years earlier when 1214 hectares of Hartz Mountains National Park in far southern Tasmania were revoked on 7 April 1943 to allow logging (Mercer and Peterson 1986). But the Hartz precedent was certainly compounded, and some of the principal actors in the Mt Field drama and some of the tactics they employed were then recycled into later conservation debates. Pressure for further park revocations included a 1952 recommendation by the Kingborough Council to the Forestry Commission that timber companies be allowed to cut trees in certain Scenic reserves which were 'unlikely to be exploited as tourist attractions' (*The Mercury*, 11 March 1952). A further 405 hectares were revoked from Hartz Mountains National Park on 12 March 1952; another 283 hectares were revoked on 5 May 1958.

In a November 1976 variation of the tactic employed successfully at Mt Field, the Tasmanian Parliament, under Premier Reece, revoked yet another 2150 hectares of Hartz Mountains National Park, ostensibly to compensate the now defunct Australian Paper Manufacturers Ltd for reserving a very remote corner of its logging concession at Precipitous Bluff (Kiernan 1975). Estimated wood volumes in the two areas and the much greater accessibility

of the Hartz forests were considered by conservation interests to be weighted heavily in favour of the company, offering a commercially much more attractive proposition (Harwood 1978). Most if not all the steep and rugged Precipitous Bluff karst could not be logged under today's *Forest Practices Code* for soil and water management reasons, and hence would not now attract compensation.

During the 1970s efforts were also being made to secure protection of the longest single cave then explored in Australia, the 20 kilometre-long Exit Cave near Lune River in southern Tasmania, but again strong objections were maintained by the Forestry Commission who were prepared to set aside only such land as might be required 'for essential purposes, such as car parking'. Part of Exit Cave was eventually reserved in 1979, but adequate boundaries were not adopted until after the majority report of the Lemonthyme and Southern Forests Commission of Inquiry (Helsham et al. 1988) endorsed its World Heritage significance—one of only four small areas to qualify under the very rigid criteria adopted by the Inquiry. Even then there was a long battle before the progressive destruction of the cave by a limestone quarry was halted (Kiernan 1993).

Events at Mt Field influenced other types of Tasmanian conservation issues, including Lake Pedder. The Premier of the day was E.E. Reece who as Minister for Works had chaired the Parliamentary committee that endorsed the revocation of the Florentine forests from the Mt Field National Park; and who as State Treasurer had denied the National Park Board the royalties it anticipated from salvage logging. When possible implications of development in the Serpentine Valley area first stirred public concern, Premier Reece's acknowledgment merely that there would be 'some modification' of Lake Pedder National Park (McKenry 1972) faintly echoed the innocuous terminology employed in the *National Park and Florentine Valley Bill* 1949 which indicated its purpose was merely to 'amend' the boundaries of Mt Field National Park. When conservationists obtained legal opinion indicating that flooding of Lake Pedder National Park was unlawful and proposed to seek an injunction, Reece appointed himself Attorney General, and promptly recycled the title 'Doubts Removal' from the Mt Field Bill into new legislation to retrospectively legalise the flooding. Similar retrospective legislation was enacted in 1981 to validate flooding of Cradle Mountain-Lake St Clair National Park by the Pieman River Power Development.

In responding to claims for the protection of natural areas, some forestry advocates complain that industry is always the loser. The history of Mt Field National Park shows this assertion is unsustainable. Over 5500 hectares of

Tasmania's National Parks have been permanently revoked to allow logging in areas once supposedly preserved in perpetuity. Mercer and Peterson (1986) have contrasted the extent of park revocation in Tasmania against a history of minimal revocation elsewhere in Australia and concluded that no other Australian State has adopted a policy of park revocation quite so readily. While Tasmania may have a greater percentage of its total area under reservation than any other State, this smallest State has permanently revoked a greater area of national parklands, in absolute area terms, than has any other, and possibly a greater area than the total revoked in all other States combined. And almost entirely for logging. Revocation was replaced in the 1960s and 1970s by mechanisms to permit development inside parks, as evident from the 'salvage' logging inside Mt Field National Park and the drowning of Lake Pedder, the latter leaving Tasmania's apparent area of national parks misleadingly inflated by a 240 square kilometre artificial reservoir.

Hence, Lake Pedder was not the birthplace of Australia's conservation movement nor was it even the first 'national' campaign, as evident from interstate representations on the Mt Field issue, for instance by the Queensland National Parks Association. The significance of the often overlooked campaign waged by those who resisted the Mt Field revocation was much greater than has been generally acknowledged, even in texts purporting to record the evolution of the Australian conservation movement (Hutton and Connors 1999, Mulligan and Hill 2001). Indeed, few contributors even to a recent history of Tasmanian forest conservation campaigns (Gee 2001) seem to recognise any history before their own.

Important management problems persist at Mt Field itself. In their correspondence to the Premier dated 2 January 1948, Australian Newsprint Mills claimed that giving it access to the western part of the park meant 'that the outlook over the forests of the Florentine Valley from the outstanding mountain peaks in the National Park will be enhanced and not spoilt by the Company's operations', apparently basing this view on the assumption that replacing 'over-mature' forest containing 'faulty' trees by regenerated forest would improve the scenery. No mention was made of the scars to be left by roads, quarrying and logging. The outlook from Mt Field West, the most celebrated summit within Mt Field National Park and a grandstand towards the Tasmanian Wilderness World Heritage Area, has since been massively disturbed by logging of the original Australian Newsprint Mills concession, the revoked national parklands, and by un-rehabilitated logging roads and poorly-regenerating forest and alpine vegetation within the park itself. Park boundary design remains wholly inadequate, with arbitrary cadastral

boundaries cutting across natural systems such as the caves. Meanwhile some sensitive caves are increasingly being loved to death due to the absence of any effective cave management.

Since the first conservation initiatives were taken at Mt Field, perspectives on the values of parks have evolved. The former focus on scenery, recreation and tourism has been overtaken by a greater emphasis on scientific approaches to the conservation of biodiversity. But environmental attributes other than biology remain under-recognised, undervalued and under-managed. The Junee-Florentine caves never featured significantly in the anti-revocation campaign by the conservation lobby and were given no account in the un-resisted decision to allow salvage logging in the remaining park. That same excessively biocentric focus which proved so detrimental to the conservation of wider environmental diversity at Mt Field remained evident in the neglect of geodiversity during the 1996-1997 Regional Forest Agreement process, which left some of Australia's deepest and most important limestone caves still lacking adequate legislative protection.

Conservation activists continue to focus on tall trees, mirroring the scientific community's preoccupation with biodiversity, and bureaucratic and political responses to that narrow agenda. Meanwhile wider environmental diversity, and particularly geodiversity, still languishes. As the karstic arteries pulsing beneath Mt Field continue to face occlusion by sediment bleeding from the wounds inflicted, we should perhaps be asking ourselves how many other hidden values are being overlooked and undervalued in contemporary land allocation and forest management.

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16

Hard work to starve: a Tasmanian play

John Dargavel

Preface

The play is set in the quietly thriving fruit-growing and timber district around Geeveston in southern Tasmania in 1921-22. Life had settled down after the First World War and the Commonwealth Arbitration Court had raised wages for timber workers and engineers and had reduced their weekly hours of work from 48 to 44. The bush workers were paid weekly instead of daily. An economic downturn struck in 1921. Many Tasmanian sawmills found themselves overstocked with wood drying in their yards and had to close or work short-time. Unemployment rose sharply. Industrialists seized their chance to wind back the labour gains.

The Huon Timber Company at Geeveston was one of the two large sawmilling firms established in Tasmania with British capital in 1902. It invested heavily in building an extensive railway system into the forests in order to bring its logs to the mill. The latest American sawmilling equipment was imported, including two very large band saws for the initial breaking down. Mechanical handling systems were installed at the mill powered by electric motors, a most advanced development at the time. The American equipment was not suited to eucalypt logs and financially it was a failure. By

1908, neither it nor the other large mill at Dover had made a profit and they were sold to another British company, Millars Karri and Jarrah Ltd for about one-third of their cost. Millars had sawmills in Western Australia, the Philippines and elsewhere and sold largely on international markets for railway and heavy construction timber. Millars appointed Henry Jones & Co to manage their affairs. Jones failed to make them profitable and Millars finally closed the Geeveston mill in 1924. It was economically marginal in 1921.

Sir Henry Jones (1862-1926) exerted a dominant influence in southern Tasmania. He was a wealthy and influential figure in Tasmania. His company was primarily a jam-maker, but he had made money mining in Thailand and had diversified. He owned other sawmills, as well as having shares in the Huon Timber Company. He was known for his uncompromising opposition to the existence of the Commonwealth Arbitration Court and any award system for fixing wages and conditions.

Henry Jones, assisted by an associated sawmiller, Jock Hay, saw the economic downturn as their chance to force the timber workers to work for longer hours, less pay and poorer conditions than they had been granted under their Commonwealth award. They closed the Geeveston sawmill and later other sawmills in southern Tasmania. They hired non-union labour to do some reconstruction work on their railway and tried to introduce a group contract system to shut out the union. The dispute lasted for 15 months and was seen by the timber workers as an attempt to starve them into submission. There was considerable hardship, although more in the isolated mills than in Geeveston proper. The economic realities of the industry, of the Huon Timber Company in particular, and an eventual defeat for the timber workers and engineers in the Arbitration Court meant that the workers eventually won only a token victory.

The historical record includes several assaults, shots, explosions and court cases, discussions in State Parliament and attempts by the Premier, the police and local citizens to resolve the dispute. This dramatisation includes typical incidents. The record makes no mention of women apart from Mrs Double and a young girl, assumed to be her daughter. Mrs Webb, Mrs Conway and Mrs Ashlin are imaginary characters assumed to be Mrs Double's cousins. The first names of some characters have been invented.

Scenes

1	December 1920	Afternoon tea
2	March 1921	Sir Henry Jones' Office and a plot
3	July 1921	Afternoon tea
4	November 1921	The embankment and a revolver
5	January 1922	Afternoon tea
6	January 1922	Town Hall—collecting relief
7	February 1922	Premier's Office
8	April 1922	Afternoon tea
9	May 1922	Town Hall—a film show and an explosion
10	May 1922	At Mrs Double's—the next morning
11	May 1922	Geeveston Police Station
12	June 1922	Afternoon tea
13	June 1922	Ambush on the track
14	June 1922	Geeveston Police Station
15	July 1922	Town Hall—the Trial
16	October 1922	Afternoon tea
17	October 1922	Town Hall—a bitter victory
18	1929	Afternoon tea—a sad epilogue

Cast in order of appearance

MRS GLORIA WEBB*	Mother of Justin and Charles Webb, cousin to Margie Double, Fanny Ashlin and Lillian Conway
MRS MARGIE DOUBLE*	Boarding house landlady
MRS LILLIAN CONWAY*	Wife of company railway supervisor
MRS FANNY ASHLIN**	Geeveston housewife
SIR HENRY JONES	Capitalist
JOHN 'JOCK' HAY	Associate of Henry Jones
JOHN JONES	Union organiser
FRANK BURBURY	Scab
VERNON ROOKE	Young scab, 17 years old
FRED CARPENTER	First contractor
SIR WALTER LEE	Premier
JOE LYONS	Leader of the Opposition Labor Party
BILL SCANLON	Union secretary,
JUSTIN WEBB	Timber worker
CHARLES WEBB	Timber worker
JOHN THOMPSON	Timber worker
FRANK 'POPPY' THOMPSON	Timber worker
WILLIAM GAYLOR	American high-lead logger
MANAGER	Picture show
SAM BROWNE*	Police Superintendent
JIM OAKES*	Chief Detective
E.W. TURNER	Police Magistrate
A.G. OGILVIE	Labor MLA and lawyer
ARCHIBALD HECTOR M'INTOSH	Iron turner

* Imaginary first name ** Imaginary character

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Reports in the *Huon Times*, *The World*, *The Mercury* and the Premier's Department files in the Tasmanian State Archives provided part of the dialogue. The Australian Timber Workers' Union—No.6 Tasmanian Branch (now CFMEU) permitted the union's records in the Noel Butlin Archives of the Australian National University to be used. The play was first performed in the Geeveston Town Hall on 21 February 2002 thanks to the energy and enthusiasm of Dick Geeves, John Walker, the cast and production team of Geeveston people.

Scene 1: December 1920, Afternoon tea

MRS ASHLIN *bustles in carrying cake followed by* MRS DOUBLE. MRS WEBB *and* MRS CONWAY *with tray, teapot and cups. Sit at side Table.* MRS ASHLIN knits.

MRS WEBB — This week I've baked a Lemon Cake, I know it's your favourite, Margie.

MRS DOUBLE — That's lovely, Gloria, what's the occasion?

MRS WEBB — Well, everything is looking up in Geeveston in 1920 and I wanted to celebrate. If I couldn't celebrate with my own two cousins who could I celebrate with?

MRS CONWAY — That's right. 1920 will certainly be remembered as the year Geeveston looked up. Jack says they had more orders in the mill than ever before. He had a struggle to find enough men to keep the logs up to the mill.

MRS DOUBLE — It's been good for my boarding house too, I've been full all year. But what's so special today? It's only a week to Christmas?

MRS WEBB — You haven't heard yet? I'm so excited I could just hug that Justice Higgins in that new Federal Arbitration Court in Melbourne. Do you know he's given all the timber men every Saturday afternoon off and we can have them home. They only have to work 44 hours a week now instead of the old 48.

MRS CONWAY — Oh dear, there'll be trouble, Sir Henry Jones won't wear that.

MRS WEBB — But that's not all. The best bit is that the bushmen are going to be paid weekly instead of daily. They'll get paid even when its raining. When I think of it, it makes me cry (*cries into hanky*). You know I'm sure my Fred would have lived longer if he hadn't always gone cutting in the winter rain, what with his weak chest after the war. He said it was for me and the boys, but what sort of a father is he when he's dead? and now the boys are so wild. If only I had my Fred ... (*cries more, comforted by other ladies*).

Scene 2: March 1921, Sir Henry Jones office

SIR HENRY JONES Thanks for coming over on my first night home, Jock. I still don't like this 44 hours nonsense. I had a chat about it to some of the other big timber men in Melbourne on my way back from Thailand. They're going to mount a big campaign and we've got to do our bit in Tasmania.

This Arbitration Court has got right out of hand. I've been against it from the start. I said to the Chamber of Commerce before I left, fixing a standard wage destroys workers' ambition and initiative. The fast man, sees his slower comrade receiving the same wage for less work. Naturally, he slackens off till he is down to the same standard. Its an evil. If we don't abolish it, we can never hope to take our place among the great manufacturing nations.

JOCK HAY Yes, Sir Henry.

SIR HENRY JONES The Premier's got his State Wages Boards and can't stand all this Commonwealth interference.

Well, now, what's been happening while I've been away?

JOCK HAY Tasmania's being hit really hard by this recession. Exports are way down. Peacocks closed their jam factory last night and Bill Leitch has had to let 100 of your jam factory men go too. Unemployment is rising and the Premier says he is worried.

SIR HENRY JONES What about timber? I am glad you have been looking after *my* operations as well as your own saw mills.

JOCK HAY Well, Risby's and Kemp's seem to be doing OK with their local market, but our mainland markets have just about dried up. I can't get a thing into Sydney, they are flooded with cheap oregon.

Our Huon Timber Company mill at Geeveston really worries me. We are just not getting foreign orders through from Millars. I bet they are selling their West Australian jarrah and karri though. We are just cutting to stock. It can't go on. We have way too much wood in the yard. There are always production problems at Geeveston and we'll just have to do something about that high-level bridge. It won't last long and we'll have to deviate the rail onto a new bridge.

SIR HENRY JONES (*in confidential tones*) Now look, Jock, we'll just have to weather the market. But if it takes a further downturn, we'll close some of our mills and take the opportunity to knock this 44 hour nonsense out of their heads. Once they see their kids getting thinner, they'll come to their senses all right.

Now, sound out some of the other millers. It would be good if we could do this across the State.

Then, try the men out with some small things, like getting the bushmen to camp out during the week. If they agree it will weaken the union's hand later. What else?

JOCK HAY McDougall's are thinking of selling out. I could buy them out with your help. That would give us all the main southern mills.

That Scanlon riles me. He's managed to sign up all the men at Geeveston for the union and most at Leprena and Cockle Creek. We'll have to bust the union to get anywhere. I've a couple of small bush mills in the North. My idea is to get the men to work them on a contract system. I don't pay them wages, I pay them so much a 100 super feet the crew cuts. It completely by-passes the union. And the last thing is that we have got to fix up the bridge and tramway problem anyway, so we might as well do it while the HTC is closed and do it by contract on 48 hours. That'll show Scanlon who's boss.

SIR HENRY JONES We'll have to pick our time. Could be a few months yet. *Pause.* Like a game of billiards before you go, Jock? *(both exit)*

Scene 3: July 1921, Afternoon tea

Ladies enter as before. Mrs Ashlin continues to knit.

MRS DOUBLE It's caraway seed cake this week, Lillian.

MRS CONWAY Lovely, Margie. It's risen a treat. I don't know how you have time with all you have to do.

MRS DOUBLE We always bake for the lodgers. My Cora's a bit better now and she helps with the baking.

MRS WEBB I don't know how you two can chatter on. They've closed the mill. My boys are locked out. I don't know what they are going to do. I don't know how we are going to manage.

We've very little put aside ... *(Cries)*

MRS CONWAY — I know, I know, Gloria. It's a worry, but surely it won't be shut long? And I'm sure they'll pick up a bit of work in the orchards. What about asking Aunty Grace if Uncle Cliff could use them over at Cygnet?

MRS WEBB — *(not listening)* I told them and told them, it's better to have a job even if you have to work longer. But they wouldn't listen. Fred was always a good union man, and they take after him. I should be grateful really, but ... *(cries)*

Scene 4: November 1921, The embankment

JOHN JONES — *(Enters and talks offstage to men)* How's it going, eh? Do you fellers know this is a union award site? Its a Federal Award and you only have to work a 44 hour week. What they got you on?

SCABS VOICES OFF — Its 48 here and only day wages. They say it's a Wages Board job. We haven't had any work for a while. It's not much but we're glad to get it. That RSL employment scout brought us down here. He said it was legal.

JOHN JONES — Well, think about it. Its not right. All the men here have been locked out because they wouldn't cop that. We got a good award from the Court in Melbourne last year. We've got to stick to it. You wouldn't want to let your fellow workers down would you? You're not dirty scabs are you?

FRED CARPENTER — *(Hurries in and goes up to Jones)* Get off this job. These are my men and the company's told me you can't talk to them.

JOHN JONES — Bugger off. I'll talk to who I like.

(Carpenter pulls revolver and aims it at Jones. Jones goes straight in, grabs revolver, knocks Carpenter over and thumps him a couple of times.)

JOHN JONES — Don't try any of that with me you scabby mongrel. A real man doesn't need guns here. I had enough of that in the War. This *(waving the revolver)* goes straight to the police, we'll soon see what they have to say. *(Exit)*

FRED CARPENTER — *(Exiting left, nursing head.)* Well, they won't be helping you, that's for sure.

Scene 5: January 1922, Afternoon tea

(Ladies enter as before. Mrs Ashlin continues to knit.)

MRS WEBB — I'm sorry, its only pikelets, girls. *(sniffling a bit)* we're getting a bit short, I don't know what we are going to do ... my boys can't get work and now that Jock Hay has shut all the other mills too. Cockle Creek is shut. So is Leprena. All those poor people, the mill houses are so awful and they had typhoid too. It was an awful Christmas, I couldn't get anything nice for my boys, and oh, dear!... *(about to cry)*

MRS CONWAY — *(Quickly)* The pikelets are lovely, Gloria. And some of your lovely raspberry jam too. I don't know how you manage it, I can never get mine to set.

MRS DOUBLE — They are taking it seriously up there in Hobart at last. *(Reading the Huon Times)* Mr Watkins in the House of Assembly drew attention to the very serious conditions of hardship brought about by unemployment among the timber workers in the Leprena and Cockle Creek sawmilling districts. He suggested that the Premier brought the parties together. A good deal of feeling was introduced into the debate and very considerable disagreement between members of the Labor Party. It was evident from the remarks of Mr Dicker and other members that the attitude of some union officials and the feeling between the union Secretary — that's Bill Scanlon, of course, Edith — and the management of the mills — they must mean Jock Hay, I suppose — was responsible in some measure for the prolongation of the trouble and the consequent extreme hardship which the workers and their wives and children were suffering. *(Pause)* I see Sir Walter Lee is going to call the conference jointly with Joe Lyons.

MRS CONWAY — Well, its about time they did something. Its been going on for six months already. How can people eat?

MRS WEBB — Oh, I hope they can, my boys are getting so angry. I worry they'll do something stupid and only get themselves into trouble; as though I haven't got enough to worry about already ... *(starts to cry again)*

Scene 6: January 1922, Hall collection

(John Jones and Bill Scanlon Enter from rear of Hall with collection boxes. They pass through the audience seeking donations.)

JOHN JONES — *(Calling out)* Help the starving timber workers' families!

BILL SCANLON — *(Calling out)* We can't get our legal rights. Contribute what you can for your fellow workers.

JOHN JONES — Lockout by unscrupulous bosses. They are trying to starve us out.

BILL SCANLON — Helping them, you help yourselves. If bossdom gets away with this, they'll be starving you next!

JOHN JONES — Anything you can spare will help some hungry kids.

VOICE FROM CROWD — What's this all about? How long you blokes been out?

BILL SCANLON — They started locking us out in July, now its January. Bossdoms ganged up against our legal rights from the Australian Arbitration Court. These grasping — well, I'd better not say what I really think of them, had I? *(chuckles)* Those capitalists are trying to starve us into working longer hours for less pay.

(Sees Mrs Webb) Hello, Mrs Webb. The relief fund is being well supported. We'll be able to help you alright. You've got two good sons there Mrs Webb, Fred would have been proud of them.

MRS WEBB — I know, Mr Scanlon, but I do miss Fred so ...

(John Jones and Bill Scanlon exit to rear of hall, collecting as they go)

Scene 7: 1 February 1922, Premier's Office

(Sir Walter Lee and Joe Lyons Seated at table)

SIR WALTER LEE — I am glad we are doing this together, Joe. I want to get all this trouble at Geeveston and the South fixed, as I am sure you do. After the debate in the House, I wrote to the union and asked Scanlon to bring two representatives from Tarranna, Leprena, Cockle Creek and Catamaran with him. And of course I wrote to Sir Henry and John Hay.

JOE LYONS — I agree. We'll hear what the millers and the men have to say and see if we can bring them together. It's disgraceful

to have people brought to ruin in 1922.

SIR WALTER LEE — Do you think the men will accept this new proposal of Hay's to work the mills on contract? I gather Sir Henry is prepared to make their wages up to the award for a month under the new system.

JOE LYONS — Lets have them all in and see. *(Calls)* We are ready now.

(Enter John Hay, Bill Scanlon, John Jones and men from mills)

SIR WALTER LEE — Thank you for coming, Gentlemen. As you know Mr Lyons, Leader of the Labor Opposition, and I have called this meeting with two aspects in mind. First, is the possibility of bringing the parties together with the object of starting certain sawmills for which an offer has been made to start under certain conditions. There is a definite offer by Sir Henry Jones in regard to certain mills under the control of John Hay Pty Ltd.

Second, is the possibility of bringing employers and employees together generally throughout the State with a view to a variation in the Award and re-starting the industry generally.

JOHN HAY — *(Blustering)* I understood the conference today was to try and arrange a satisfactory settlement between the men actually employed and myself so that the mills could be restarted. The men have signed on you know. Now I am confronted by union Secretaries and Union Stewards!

BILL SCANLON — These men were selected to attend by the timber workers.

JOE LYONS — The attitude Mr Hay has taken up, then, is that the men could resume work if they did so on the conditions he offered; if they did not accept these conditions, the mills would remain closed.

BILL SCANLON — Hay threatened that if they didn't sign he would get other men. The men unanimously rejected it.

SIR WALTER LEE — *(Puzzled)* I am at a loss to understand this. First Mr Hay says he has signatures signifying the men's willingness to work under an agreement. Now Mr Scanlon says they unanimously rejected it. *(Holding agreement, turns it over and asks very astutely)* There are a number of items on the back of the agreement, setting out the salaries and so forth. Were they submitted to the men?

JOHN HAY *(Reluctantly)* No.

JOE LYONS The men did not commit themselves to any definite scheme?

JOHN HAY *(Reluctantly)* No.

JOE LYONS Chesterman's and Gathercole's were still working. The men must have wanted an opportunity to prove that they could work under the agreement and work profitably.

SIR WALTER LEE There seem to be two agreements, is that right?

JOHN HAY Yes. I got them to sign a statement and said it would be followed by a legal agreement — that's the one you have. It was subsequently shown to the men and they rejected it.

JOHN THOMPSON I represent the Geeveston men. Why isn't the Huon Timber Company here?

SIR WALTER LEE That company had no suggestion to offer about re-starting and I understand that their London Head Office has refused to find any more money to do so.

Well, I am sorry that we have not got further this afternoon, Gentlemen. I would like to have another round table meeting before the matter goes to the Arbitration Court in the usual way. *(Lee and Lyons exit followed by Scanlon, Workers and Hay)*

Scene 8: April 1922, Afternoon tea

(Ladies enter as before. Mrs Ashlin continues to knit.)

MRS DOUBLE It's cream sponge today, girls. I'm so excited. You know we've got those two Americans staying now.

MRS CONWAY Jack says they are going to set up high-lead logging systems, whatever they are. Apparently they are all very daring and they climb right up the tallest trees and cut their tops off.

MRS WEBB Oh that's so good, it must mean they'll start the mill again.

MRS DOUBLE I know. But have you seen him, William Gaylor, I mean. He's so handsome and I think he's taking a shine to my Clara. She's quite getting the colour back in her cheeks.

MRS CONWAY Well, that Fred Carpenter gave up. He couldn't get anyone to work for him for long. I'm glad the company gave him

a job to keep going, they've got five kids, you know..

MRS WEBB — His scabs got hurried off all right. It was disgraceful that the police never charged him. Pulling a gun like that. No one will speak to him. He'll have to work by himself.

MRS CONWAY — Yes, but now they've got that Louis Rapp up from Dover to take over the deviation contract. My Jack says he's a real hard one, arrogant. It's his being German, people say. He won't stand for having his men scared off.

MRS DOUBLE — Well, he's filled up my Boarding House with them, though where he's got some of them from, I don't know. One's a deserter and I think another's done time. Then there's that Vernon Rooke from Franklin. He's only just 17, too young to be mixing with that lot.

MRS WEBB — Feelings are running very high. There's going to be trouble, and my boys are going to get into it, I know ... oh, dear! *(Ladies exit).*

Scene 9: May 1922, Town Hall cinema show

(Enter ladies and audience, including Mr and Mrs Alexander, and sit in rows of seats awaiting the start of the picture show)

MRS WEBB — After all the trouble we've had, I'm really looking forward to the film. It's a real treat.

MRS DOUBLE — It was on in Hobart last week. Its good they've got it right down here.

MRS CONWAY — *(Calling out)* Cooee, Mrs Alexander, we're over here. I'm glad she's come. I didn't think they would, the mill manager's hardly popular.

MRS DOUBLE — And here's all my boarders.

(Enter William Gaylor, Frank Burbury, Vernon Rooke and other scabs)

AUDIENCE — *(Uproar, hisses)* Shame! Boo!

Go back to your holes you scum!

Get out!

MANAGER — *(Trying to make himself heard)* Please, please, everybody.

AUDIENCE — *(Uproar continues)* Put them out!

You too Alexander, get out!

MANAGER *(To Mill Manager Alexander and scabs)* I'm afraid I'll have to ask you to leave, I can't show the film with you here. You'll get your money back at the box office downstairs.

(William Gaylor, Frank Burbury, Vernon Rooke and other scabs leave followed by some of the Timber Workers. Sounds of uproar outside. Pause. Sound of loud explosion in the distance)

MRS DOUBLE Oh, my goodness, what's that? *(Rushes outside, followed by Mrs Conway and Mrs Webb)*

Scene 10: May 1922, the next morning, At Mrs Double's

(Enter Mrs Double who slumps in chair Left, followed by Mrs Conway, Mrs Webb and Mrs Ashlin who gather round her comforting her)

MRS CONWAY Margie, this is awful. what have they done? Where's Jack?

MRS WEBB Is Clara all right?

MRS DOUBLE Oh, Edith, Oh Gloria, I don't know what I'd do without you. Jack's up at the Police Station now giving a statement. Thank goodness, Clara's not hurt — she was in the back room right next to the blast. Just when she was starting to get better too. Doctor Abbott has given her something to get her off to sleep.

And look at my back verandah. All the glass has gone, and the door's been blown off, and half the stuff in the kitchen's broken. How am I going to cope with this.

MRS WEBB We'll help you clear up and get going again Margie.

Scene 11: May 1922, Geeveston Police Station

(Supt Browne and Chief Detective Inspector Oakes enter and sit at table)

BROWNE Well, how are things shaping up with the Boarding House explosion, Jim?

OAKES I know it's the timber men, Sam, but I don't think we'll ever prove it. It hasn't really done that much damage. If they had really wanted to blow the place up and kill everybody, they'd have known how to do it. Just a few plugs of jelly were let off in the garden. It's a pity that poor lass got such a fright.

BROWNE The Attorney-General's whingeing about the cost of all these extra constables all the time. And insisting that the Company gets every support. Us police just can't win.

I've told Rapp several times, he should have a policeman with him, but no, he won't listen. He's the contractor who hires the scabs, what does he expect for goodness sake. Strutted down the main street the other day, and got well and truly done over.

OAKES — We can never pin anything on anybody here. They're a close lot. We get the 'assaults' and 'disturbances' and all the rest into court, but we never get a conviction that amounts to a pinch of goat shit.

BROWNE — We're going to be stuck in Geeveston if we're not careful. Look, the only way to get us out of here is to get this dispute settled. I have organised meetings with the Company and Rapp and with Scanlon.

OAKES — Well, it's original, I must say. It's not often a Police Superintendent mediates a lock out! Lets give it our best shot, before someone's really shot.

(Exit Browne and Oakes)

Scene 12: June 1922, Afternoon tea

(Ladies enter as before. Mrs Ashlin continues to knit.)

MRS DOUBLE — I'm that disgusted with Rapp. Fancy agreeing with Superintendent Browne to settle the dispute and then reneging the next day! If only I could afford to, I'd throw all his men out of my Boarding House.

MRS CONWAY — Have a piece of sultana cake, Margie, do.

When I read the *Huon Times* last week, I really thought that we would have some peace in the town at last. Its been going on for almost a year now.

MRS DOUBLE — We are just sick of it. And the deputation that went to see the company mill manager last week got nowhere.

MRS WEBB — The paper said Alexander was completely 'intransigent', whatever that means, very antagonistic. There's no call to be so rude. I mean they were introduced by the Deputy Warden and they were all leading citizens with businesses or orchardists.

MRS CONWAY — All this is really awful. He's scraped up another lot of scabs. Over twenty now.

MRS WEBB It's our young ones I worry about. They've got nothing to do half the time. I know the police escort those rotten scabs all the time, but there'll be trouble. And they carry revolvers. It's not right in Geeveston. Someone will get shot, mark my words. I only hope it's not my boys.

Scene 13: June 1922, Ambush on the track

(Enter Vernon Rooke followed by Frank Burbury and other Scabs from rear of Hall. When they reach the front, the Webb Bros, Thompson Brothers and other Timber workers wearing masks and white armbands spring out. Scabs start to back off leaving Rooke behind.)

JUSTIN WEBB Got you now, you cowards. Haven't got your police guard now, have you?

CHARLES WEBB Take that! *(Hitting Rooke over head with stick).*

JOHN THOMPSON And that, you scabby bastard. *(Hits Rooke with stick. Rooke falls).*

(Frank Burbury pulls revolver and fires. Frank Thompson falls wounded clutching leg.)

FRANK THOMPSON *(Calls loudly in pain, clutching his leg).* Watch out, police are coming! Get me out of here.

(Timber workers exit hurriedly, supporting Thompson. Scabs exit in opposite direction supporting Rooke holding his bleeding head.)

Scene 14: June 1922, Police Station

(Inspector Browne sitting at Table. Enter Detective Oakes from rear of Hall pushing along the Webb Brothers in handcuffs.)

BROWNE That was quick work, Jim.

OAKES Well, these two hotheads were easy to pick up.

BROWNE What's the charge?

OAKES We'll do them on Grievous Bodily Harm with intent to murder Vernon Rooke.

BROWNE Give your names.

JUSTIN WEBB Justin Webb. We never did it.

CHARLES WEBB Charles Webb. You can't prove we did.

BROWNE You should understand that we have been told to pursue this to the limit. Just because the police weren't escorting Rapp's men all the way one morning, doesn't give anyone

the right to ambush them, and bash young Rooke over the head. He could have been killed.

JUSTIN WEBB — And what about them firing revolvers at people? Eh? You not going to do anything about that are you? One law for the bosses, one law for us.

BROWNE — That's just where you're wrong. We have arrested your accomplices for aiding and abetting. You will all be tried together. Take them out.

(Oakes escorts Webbs out followed by Browne)

Scene 15: July 1922, Town Hall trial

(Enter A.G. Ogilvie and P. Griffiths helping Frank Thompson hobbling. Enter Webb Brothers and Francis Burbury brought in by Oakes amd Browne.)

VOICE — All Stand!

(Enter J.W. Turner, Police Magistrate. Takes seat)

TURNER — Today we have two related cases before us. First there is the case of the Crown *vs* Francis Burbury who is charged on the count of wounding Francis Willerton Thompson with intent to do him grievous bodily harm. Second is the case of the Crown *vs* Charles Webb and Justin Leitch Webb charged with feloniously wounding Vernon Rooke with intent to murder him on June 15. Charles Drew, John Scanlon and F. McCormick are charged with aiding and abetting.

TURNER — Who appears for the parties.

GRIFFITHS — I, Phillip Griffiths appear for Francis Burbury.

OGILVIE — I, Albert George Ogilvie beg leave to watch the proceedings on behalf of Frank Thompson. I also appear for Charles and Justin Webb

TURNER — To the first matter. *(Oakes puts Burbury in the Witness Box)* Francis Burbury, how do you plead?

FRANCIS BURBURY — Not guilty.

BROWNE — I call Frank Thompson and beg leave for him to give his evidence seated.

TURNER — Granted.

FRANK THOMPSON — *(Ogilvie helps him to sit in witness box.)* I was born in Geeveston and had been timber working on the West Coast for eight

years. On the morning of June 15, I was at Hill's Crossing working for Mr Hill. I heard a disturbance and walked as far as the railway line. I caught sight of the accused, but did not see a revolver. I was wounded in the right thigh. I do not know who shot me. (*Leaves witness box.*)

OAKES *(Comes to witness box and reads his deposition.)* I am Chief Detective Oakes. I was on duty at Geeveston on 15 June. At about 9 a.m. on that morning I saw the accused, Fancis Burbury, at Rapp's works and obtained from him a revolver and 40 cartridges. I arrested and laid a charge of malicious wounding against him.

On June 17, the accused made and signed a statement to the effect that he had been engaged at work on the tramway deviation at Geeveston; that one Saturday evening he, with some of his mates, had been asked by the proprietors of the Geeveston picture show to leave the hall as their presence had been objected to by the unionists, and that they complied with the request; that while on their way to Double's boarding house, they were attacked by a large body of men. On another occasion some of his mates were assaulted and injured. On the following Sunday there was a big explosion at Double's boarding house, and he thought that unionists were responsible for this. On another occasion his mates were held up by unionists.

On the morning in question he was proceeding to work with William Hardy when they were attacked by about 50 men, who wore masks and white arm bands. One of his mates stumbled and he fell over him. When he got up he saw the leaders of the attacking party about 12 yards away with their sticks raised. He saw that it was a matter of himself or them, so drew his revolver and fired. (*Oakes leaves witness box*).

GRIFFITHS So you see, Your Honour, that the defendant had every reason to fear assault and fired purely in self-defence.

TURNER I agree. Case dismissed. We will now proceed with the second matter. (*Oakes puts Charles Webb and Justin Webb in the Witness box.*)

TURNER Charles Webb, how do you plead?

CHARLES WEBB Not Guilty

TURNER Justin Webb, how do you plead?

JUSTIN WEBB — Not Guilty

VERNON ROOKE — *(Comes to witness box and reads deposition.)* I am Vernon Rooke, 17 years of age and a resident of Franklin. I worked at the deviation in Geeveston. At about half-past seven in the morning of June 15th I left Mrs Double's boarding house with about 20 mates. At 30 yards from Hills Crossing, I saw about seven men coming towards us. I turned round and shouted "Look out, here they come". Charles Webb hit me on the head with a stick which broke. He got another stick and knocked me to the ground. All the men kicked me as they passed. Justin Webb told me to get out of it while my luck was in. I had to go to Dr Abbott, but my head still aches every morning.

I recognised both of them. Justin Webb had a cap and a mask. Charles Webb had no mask, but wore a returned soldiers badge. *(Leaves witness stand.)*

M'INTOSH — *(Comes to Witness stand.)* I am Archibald Hector M'Intosh. I am an iron turner and employed in the Engineering Department of the Band Sawmill at Geeveston. I am not a member of the Timber Workers Union.

On the morning of the disturbance, I was on the coach going from Geeveston to Hobart. Near the apple shed close to Hills Crossing, and about 30 yards on the Geeveston side I saw a number of men chasing two others along the tram track. The foremost of the pursuers struck one of the two over the head with a stick which he carried.

I saw the accused at Ryan's boarding house on the night before the disturbance. I could not swear that the two accused were the men but they looked remarkably like them.

OAKES — Why did you not come to the police and tell them what you have told the court this morning?

OGILVIE — They haven't much time for people who run to the police in Geeveston.

TURNER — How many men were there? and did any of them turn back?

M'INTOSH — There were anything between 10 and 20 pursuers and none of them turned back.

TURNER — Then how do you account for one of the Webbs saying that he went back and picked Rooke up?

OGILVIE — I object. The only imputation against Justin Webb is that he went up the line—not down—and picked Rooke up.

TURNER — *(Consulting notes.)* Yes you are right. I was combining his and Rooke's statement. *(To witness)* To put it bluntly to you. It has been sworn that it was Charles Webb who struck the blow.

M'INTOSH — If it was Charles Webb who was standing on the crossing, he could not have been the man who struck the blow because he could not have got there in time. *(leaves Witness Stand)*

LYELL HENRY — *(Comes to Witness stand.)* My name is Lyell Henry and I am the conductor of the Huon Coach. I remember the disturbance on June 15. I was sitting in the front seat of the coach and saw three men coming down the railway line towards the crossing. Near the crossing I saw a mob of 15 or 20 men get up out of the bushes and chase the three men down the line. I saw one of the men who was running along the line struck by the leader of the mob. After the man was struck he kept on running down the line towards Geeveston.

Charles Webb was one of the men who was standing there. The man who was struck was about 30 yards down the line. The man who struck the blow could not reach the crossing by the time the coach passed over it.

OAKES — If Charles Webb was on the crossing when the blow was struck, how far would he be away from where it occurred?

LYELL HENRY — About 40 to 50 yards.

OAKES — *(Cunningly)* What would prevent him running along the line after the coach had passed and committing the assault later?

TURNER — He would be behind the mob. I don't think I can accept that theory.

OAKES — When you heard that the Webbs had been arrested, what did you do?

LYELL HENRY — I laughed because I knew that one of the Webbs was not there.

OGILVIE — In this case, the police have the evidence of one man and one man only in support of the charge against the accused. If those accused were committed for trial, the whole of the witnesses for the prosecution would have to be presented

for cross-examination, not merely Rooke. The men employed on Rapps's job were gaol-birds and imbeciles. Walton had done three years in gaol. There are several contradictions in Rooke's statement.

TURNER — Well, the evidence given in this case is clearly contradictory and I have no alternative but to dismiss it. Consequently, I adjourn the case against William Scanlon and others of aiding and abetting *sine die,* which means that it effectively lapses *(Turner exits followed by everybody except Oakes and Browne).*

OAKES — Dammit, I can never get a conviction. The Magistrate sides with the scabs and the Geevestonites are all unionists or related. They'll never give convicting evidence.

BROWNE — Our witnesses were just terrorised. One man and his wife just begged me not to bring them into court to testify. It's a lost cause here.

Scene 16: October 1922, Afternoon tea

(Ladies enter as before. Mrs Ashlin continues to knit.)

MRS DOUBLE — Have some Madiera cake, Gloria, Edith.

MRS WEBB — Thank you Margie. Thank goodness that trial is over. (*Indignantly*) Imagine, trying my boys just because some rotten scab got thumped. And what about poor Frank Thompson shot by that thug. Bringing gaol-birds with guns to Geeveston!

MRS CONWAY — Do you know that Clarrie Burgess carried Frank all the way home. They had to hide him from the police, but in the end Doctor Abbott had to be called to get the bullet out.

MRS WEBB — It's all been for nothing really. I mean, I heard yesterday that the Arbitration Court in Melbourne has set the hours back to 48. It's for timber men all over Australia, and the engineers too. Though not for the timber yard men; for some reason, they are still on 44.

(More indignantly) And we have still got these rotten gunmen. The mill's closed and my boys can only get bits and pieces of work here and there.

MRS DOUBLE — Well, perhaps something'll come of this. (*Reading paper)* The Attorney-General. Mr W.B. Probsting, is endeavouring to bring the Huon Timber Company and the timber workers

together. He has seen Mr W. Scanlon of the Timber Workers Union and representatives of the company. Yesterday he communicated with the Industrial Registrar of the Arbitration Court that the Government is very anxious that the trouble should be finalised.

MRS WEBB *(Interrupting)* Well, that's a change of face now that Henry Jones' lot have got their way!

MRS DOUBLE *(Continues to read)* In the evening he received a reply. The Registrar had had a preliminary meeting on 3 October which had been adjourned so that the union representatives currently in Victoria could communicate with their members.

Messrs Gray and Alexander of the company have left to go to Melbourne and all parties in the Geeveston matter now agree to submit matters to a Board of Reference meeting in Melbourne on 13 October. That's next week.

MRS DOUBLE Sounds hopeful, doesn't it. Have another piece of Madiera, Edith?

Scene 17: Town Hall, 16 October 1922

(Enter all the cast. Bill Scanlon enters from rear of hall. Walks through Audience holding a piece of paper aloft.)

SCANLON *(Calling out)* We've got it, we've got it! Fifteen months struggle and we've got it!

Reaches front of Hall and addresses everyone.

(Reads) Complete victory. The Board of Reference decided that the company would give Contractor Rapp and his men a week's notice from tomorrow, Tuesday 17th October 1922.The Registrar stated that the contract was let with the purpose of evading the award.

The company is to finish the job and employ our members.

CROWD *(General cheering)*

TIMBER WORKERS Hurrah! Go back to your holes, youse scabs *(Scabs slink out muttering).*

CROWD *More general cheering, clapping as remaining cast except ladies exit.*

Scene 18: 1929, Afternoon tea

(Ladies move to tea table)

MRS CONWAY — It's a proper Huon apple cake this week, cousins.

MRSWEBB — I do like getting together each week. It's a real comfort.

MRS DOUBLE — *(Reading the paper)* It seems such a long time, since all our Geeveston troubles. Seven years ago, and now all the men in the mainland timber yards are having a big strike. They have been locked out in Sydney and some of the Melbourne places.

MRS CONWAY — All that trouble here, and what for, I ask? They ended up having to work the 48 hours anyway. The mainland yard men will end up the same.

All that trouble, and the mill closed anyway. Jack worked there for years, but the company never made a go of it.

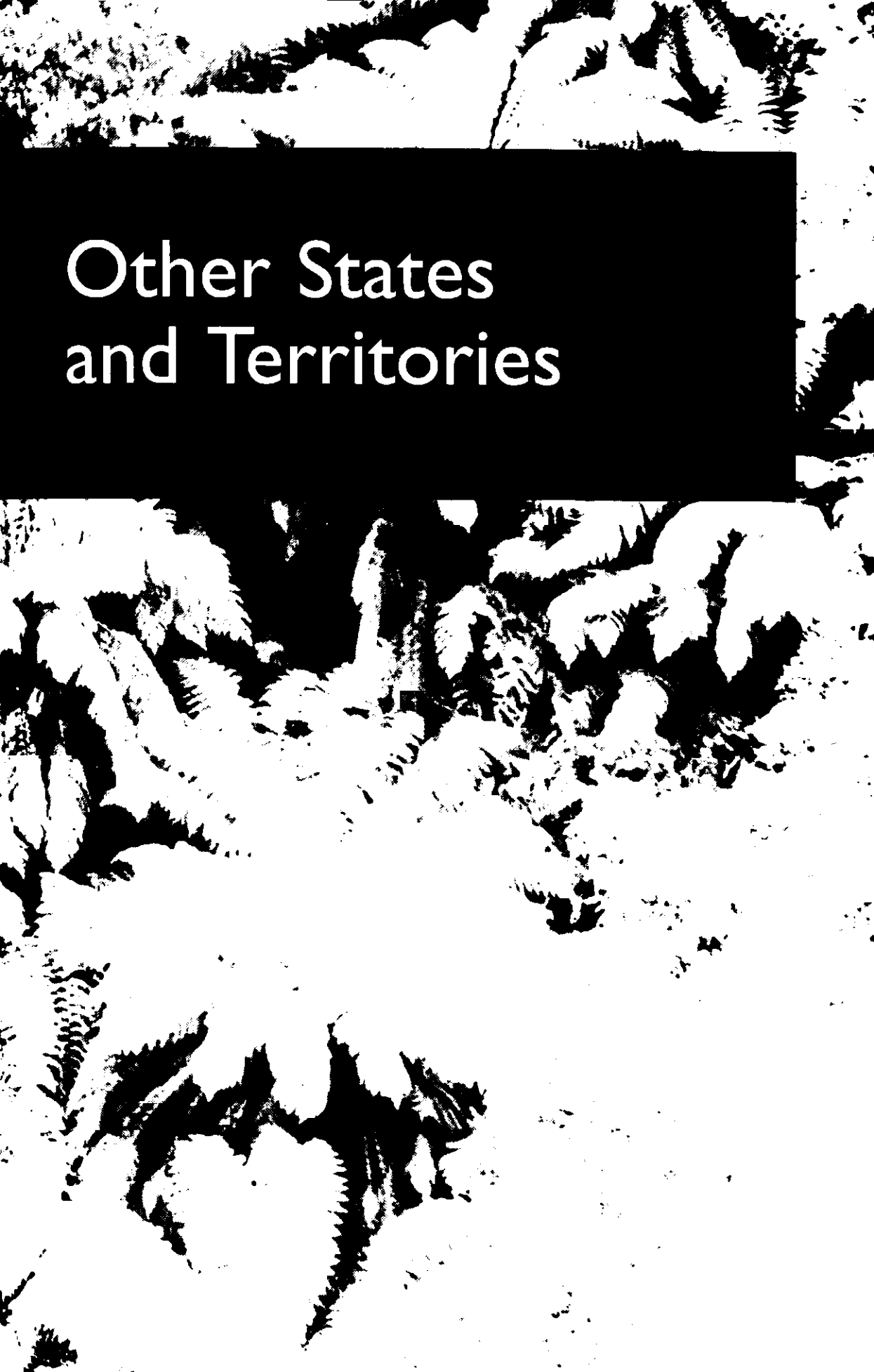
MRS WEBB — My boys saw the writing on the wall and cleared off. Justin's in Queensland and Charles is right up in the Northern Territory now. I'm here in Geeveston and I'll never see *my* grandchildren ... *(cries, comforted by other ladies).*

MRS DOUBLE — Well, some good came out of it. My Cora married Mr Gaylor and they've settled down nicely here. She's expecting her second in May.

MRS CONWAY — That's lovely Margie, I'd better start knitting!

MRS ASHLIN — *(Holds up baby's knitted jacket)* What do you think I *have* been doing all this time! *(Ladies exit).*

Finis



Other States and Territories

17

Historical records of tree density in the 'Big Scrub'

Brett J. Stubbs and Alison Specht

Introduction

The adoption in 1995 by the Australian Government of 'fifteen per cent of the pre-1750 distribution of each forest community' as the basis for a comprehensive, adequate, and representative national system of forest reserves (Commonwealth of Australia 1995) has provided impetus to efforts to reliably determine, to 'reconstruct', the pre-settlement pattern of forest vegetation across the country. This task is a relatively straightforward one where the landscape remains substantially unaltered, or even where numerous isolated patches of the original cover remain. In areas where the original vegetation has been profoundly altered or completely destroyed, however, it is much more difficult. Ecological models can be helpful in such cases, but they generally still require samples of original vegetation for construction and validation. In the absence of remnants, the historical record can provide a means of validating the models; where the historical record is detailed it can even provide a sufficiently reliable reconstruction by itself. In all cases, historical evidence of various types can be a valuable supplement to field studies in the determination of original vegetation distribution patterns.

Types of historical records which have been used for vegetation reconstruction range from isolated written descriptions (or sometimes

photographs) of specific localities, to two-dimensional representations of the vegetation over wider areas. The former sometimes can be collated to give an impression of past vegetation cover over a region or district (e.g. Kraehenbuehl 1996). More important, however, are the latter type, which include early land survey plans, and associated surveyors' field note-books. Such plans often contain a detailed record of the pattern of vegetation at the time of survey, often before any substantial modification had occurred, and sometimes showing distinct boundaries between different vegetation types.

In addition to spatial information assembled from survey plans to produce maps of past vegetation, survey data relating to individual trees can be compiled to assess the species composition of those communities, and to determine structural attributes of the vegetation, such as tree density. In this project, distances between reference trees and the corners of surveyed portions have been used to estimate the original tree density in former areas of brush (sub-tropical rainforest), particularly the Parish of Clunes, County of Rous, in the 'Big Scrub' district of north-eastern New South Wales. Limitations and advantages of the method are discussed with respect to its ability to aid our understanding of the original diversity and structure of this now largely extinct vegetation type.

Survey records

The ecological literature of the United States of America contains some early examples of the use of survey records in vegetation reconstruction. These include a map of the virgin forest of Ohio based on corner trees from the original survey of the state in the late 18th century (Sears 1925); an assessment of the composition of forest in Pennsylvania based on survey notes from 1814-15 (Lutz 1930); and a vegetation map of the Brule Basin, Wisconsin, based on survey records from the 1850s (Fassett 1944).

Early Australian examples involve the use of historical land survey records to supplement field studies in the creation of regional vegetation maps. Crocker used original survey plans in addition to field studies to compile vegetation maps of Eyre Peninsula (1946a) and the Simpson Desert and its borders (1946b) in South Australia. Connor (1966) used survey plans in addition to remnants preserved along road reserves to compile a map of the vegetation around Horsham in the Wimmera region of Victoria.

More recently, spatial reconstructions of the natural vegetation of several intensely cleared areas in New South Wales have been attempted using mainly surveyors' portion plans. These are plans that were prepared as

portions (rural allotments) of land were surveyed for alienation from the crown. Although each plan may cover only a small area (often less than 20 hectares), many such plans can be assembled, using modern cadastral maps as templates, to give a continuous representation of the pre-settlement vegetation over a much wider area. The earliest known reconstruction of this type in New South Wales is of the Jamberoo valley in the Illawarra district (Hunter 1974). Methodologically similar reconstructions were subsequently undertaken of the vegetation of the Parish of Lismore (Jeans 1978), the Dorrigo plateau (Henderson 1980), and the 'Big Scrub' of the Richmond River district (Jeans 1991). Jeans (1978) also discussed the use of historical records, in particular portion plans, for vegetation mapping in New South Wales.

In the Illawarra district, where Hunter worked, the vegetation patterns and descriptions recorded by surveyors proved to be insufficiently detailed to allow their successful use for reconstruction purposes (Mills 1988, p.234). Restricted by this deficiency, Mills used an ecological model, based on soil, altitude, rainfall and other factors, supported by historical evidence, to determine the original distribution of rainforests in that district (Mills 1986, 1988). In the northern coastal districts of New South Wales, where the settlement, clearance, and survey of the land generally occurred later than in the south, surveyors' plans are more informative, and have been used with greater success for vegetation reconstruction (Jeans 1978; Henderson 1980; Jeans 1991; Ryan and Stubbs 1996; Stubbs 2001). Recent examples of the use in other Australian states of similar methods based on surveyors' plans are Smith (1988) for the Northern Adelaide Plains in South Australia, Lunt (1997a) for the lowland Gippsland Plain in Victoria, Morcom and Westbrooke (1998) for the Wimmera Plains in Victoria, and Fensham and Fairfax (1997) for the Darling Downs in Queensland.

The mapping of spatial patterns of vegetation has been the most common use of survey plans in vegetation reconstruction. This has been most successful when the surveyors have indicated boundaries between different vegetation types. The boundaries which are most clearly indicated are those between rainforest ('brush') and other vegetation types such as open-forest, swamp, or grassland. This reflects the naturally abrupt and pronounced boundary that occurs between rainforest and these other plant communities. Elsewhere, boundaries between vegetation types are generally not shown, and the presence of different communities is merely indicated by annotations on the plans. This does not preclude the construction of vegetation maps, but it does limit their precision (e.g. Lunt 1997a).

The correct definition of pre-settlement patterns of vegetation is fundamental to the creation of a reserve system in accordance with the

Government's fifteen per cent. of the pre-1750 distribution criterion. The reserve system imperative has, therefore, recently given a new purpose and greater importance to the reconstruction of original vegetation patterns than existed when Hunter, Henderson, Mills, and Jeans undertook their work in the 1970s and 1980s.

Reference trees

Vegetation boundaries and descriptions are undoubtedly the most obvious useful ecological information to be found recorded on historical survey plans. They are not, however, the only such information. Much less apparent sources of evidence about past vegetation are the reference trees blazed by surveyors to indicate the positions of the corners of measured portions of land. A reference tree was rarely situated exactly on the corner to which it referred, so a description of the tree and the distance and direction to its respective corner were recorded in a table on the plan of the survey. The potential use of such data in determining the nature of pre-settlement vegetation is the subject of the remainder of this paper.

A large tree could provide a stable and relatively permanent reference, and, if clearly blazed, one that subsequently could be easily found. The use of trees to mark key positions was therefore a common characteristic of early land surveys in wooded parts of colonial Australia (Beaver 1980; Williamson 1982, 1984; Marshall 1999). Not until 1836, however, did such use begin to be formalised. On 1st January that year, Surveyor-General Thomas Mitchell, having become concerned that 'the marking and measuring of the portions of land applied for as purchases' were being conducted by some surveyors in New South Wales in 'a very loose, inaccurate and unsatisfactory manner', issued a circular specifying certain procedures in that regard. Among these was the requirement that surveyors show on their plans:

> the bearing and distance of any tree or trees from the actual corners of the portions—being very particular to choose such trees and make such arrangements as may render the ascertaining of these corners a matter of but little difficulty.

A second circular issued later in the same year required that, 'in accordance with the mode adopted by the Government of the United States in their measurements of land for sale', surveyors 'letter on [their] plans the corners of every section' and attach to their plans a table showing 'the actual situation of the trees marked' together with their bearings, distances, and descriptions.

Instructions issued in 1853 for the marking of crown land by government surveyors specified procedures in greater detail than the previous circulars. In the survey of farms in forest country, trees were to be marked along boundary lines, within view of each other and as close to the boundary as possible. At each corner of the farm or allotment:

> the nearest suitable tree should be marked on four sides, with the horseshoe mark, and a large piece of bark taken off, on which a broad arrow, at least six inches long, should be marked deeply in the wood, and if the allotments of which the tree forms the corner are numbered, such numbers should be cut deeply in the wood in the horseshoe mark, on the side of the tree facing the allotment to which such number applies. A large stake...should be driven into the ground one foot at least and left about six inches above the surface at the exact corner, and the bearing and distance of the numbered tree taken from the stake, and noted on the plan.

Procedures for marking boundaries of land were further refined in a set (the first) of detailed regulations, issued in 1864, 'for the guidance of licensed surveyors' working for the Survey Department of New South Wales. Directions for marking boundaries 'beyond the limits of towns' included the requirements that:

> All boundary lines, where the country is not naturally clear, are to be cleared to a width of not less than 3 feet, by the removal of all scrub and trees of a less diameter than 3 inches.
>
> All trees upon boundary lines, or within 2 paces in thickly wooded country, and 4 paces in open forest country, are to be marked with the horseshoe mark...
>
> The corners of portions are, where a tree may stand on the corner, to be marked by four horseshoe marks, in the lines of the boundaries and their continuations; and broad arrows, not less than 4 inches long, are to be cut deep in the marks...
>
> Should there be no tree at a corner...the nearest large tree is to be marked by removing a portion of bark from nearly half of the circumference of the tree on the side facing the stake, and cutting at least 1 inch deep into the wood of the tree the broad arrow and the parish number of all the portions joining at the stake...

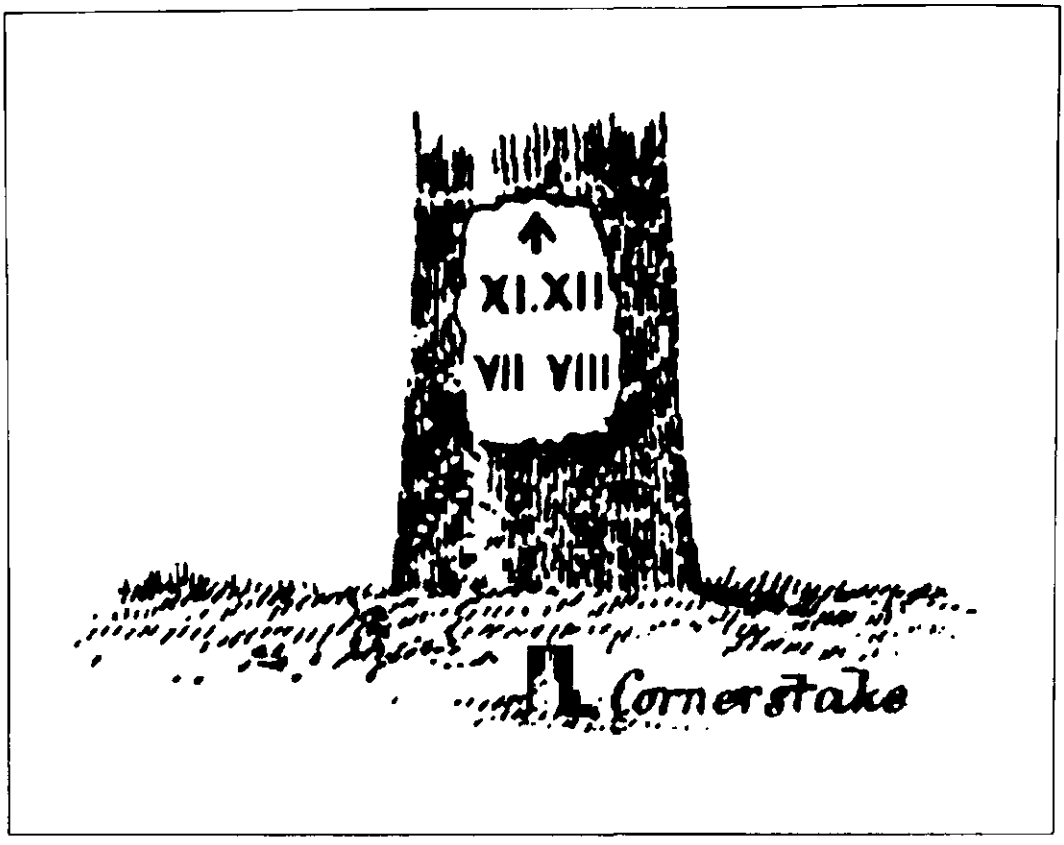


Figure 1: Diagram showing the method of marking corner reference trees.
Source: Regulations for the Guidance of Licensed Surveyors connected with the Survey Department of New South Wales, 9 May 1864.

The mode of marking a corner reference tree is illustrated in Figure 1. It is important to note that although trees were marked along boundaries as well as at and near corners, details of only the corner trees were recorded on the surveyors' plans. The 1864 regulations introduced the requirement that bearing from the reference tree to the corner was to be shown (rather than from the corner to the tree as previously), and this was the standard when the Parish of Clunes was surveyed c.1880-1895. An example of a table in which details of reference trees are recorded, from a plan made in 1880 is shown in Figure 2.

The use of tree-to-corner distances as a potential source of ecological information was explored by one of us while undertaking an historical study of the original vegetation of the substantially cleared lower Richmond River floodplain (Ryan and Stubbs 1996; this is the area immediately to the south of the river and west of Woodburn in Figure 5). The tree-to-corner distances for corners within both brush (closed-forest) and open-forest communities (as described by the surveyors on their plans) were assembled.

REFERENCE TO CORNERS.

Corner.	Bearing.	From	Links	No. on Tree.
a	Stake	N° tree near		
b	59°	Brush	14	1
c	160° 20'	do	29	1
d	Stake	no tree near		
e	do	do		
f	170°	brush	14	2
g	350° 30'	brush	10	2 3
h	180°	"	4	2 3
i	278° 20'	"	20	2
j	300°	"	24	3
k	335°	brush	39	3
l	Stake	no tree near		
m	do	do.		
n	62° 15'	brush	8	4 5
o	97° 15'	do	21	4 5
p	255°	do	35	4
q	186° 30'	do	25	5 6
R	12°	do	30	5

Figure 2: Example of a table showing details of corner reference trees on a survey plan similar to those used in this study.

Source: Plan of portions 1-5, Parish of Dunoon, County of Rous, surveyed January 1880.

These data displayed two distinctly different distributions, around means of 3.2 metres and 8.9 metres for brush and open-forest respectively (Figure 3). If it is assumed that the surveyor chose the nearest suitable tree to indicate each corner, then this suggests that the tree-to-corner distances might somehow reflect the historical densities of the two communities.

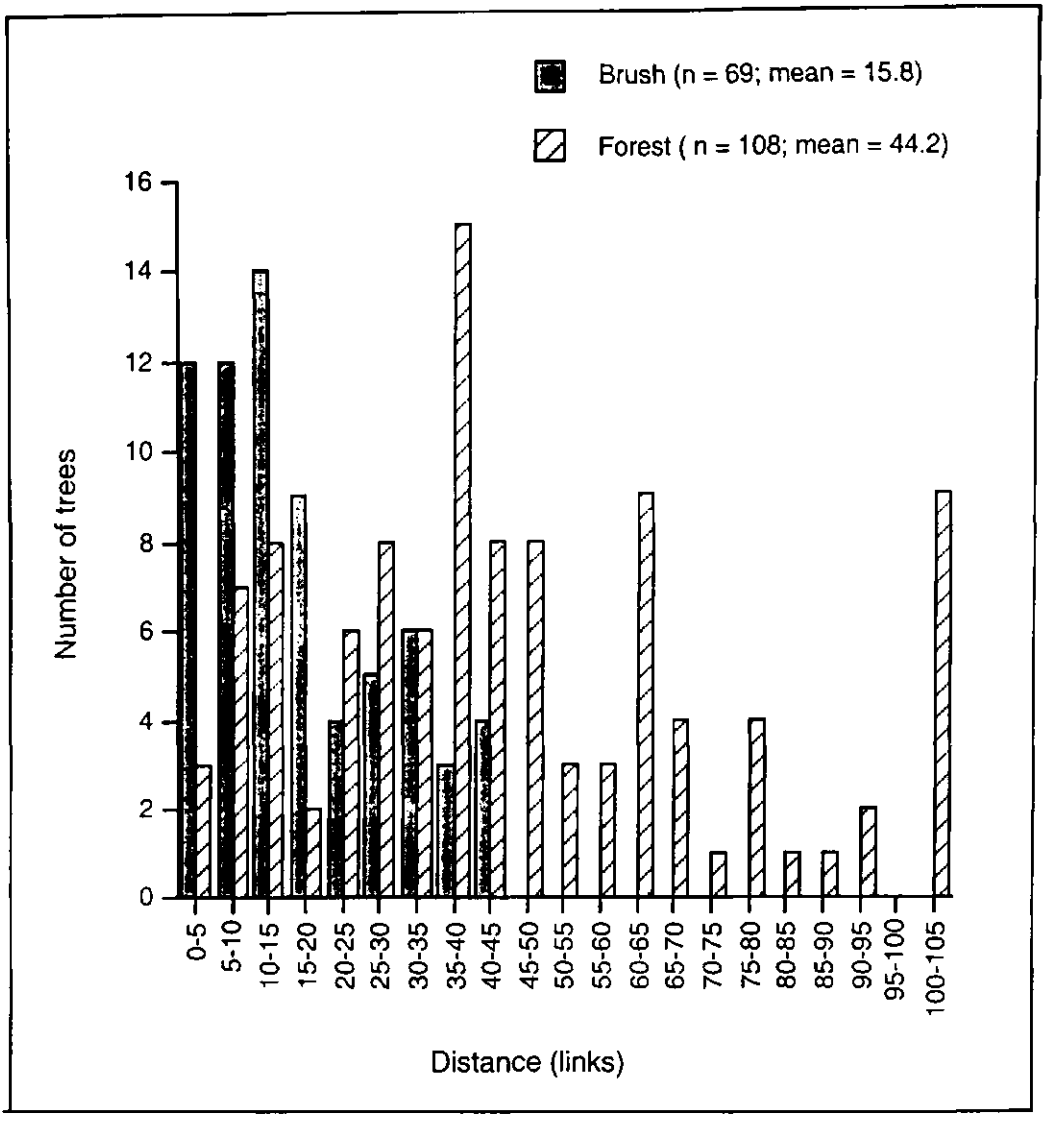


Figure 3: Distribution of tree-to-corner distances for brush (closed-forest) and open-forest in the lower Richmond River floodplain.

Note: A link (approx. 200 mm) is a hundredth part of a chain.

A similar comparison was also made using data recorded during a subsequent historical study of the vegetation of a much wider area, encompassing the Clarence, Richmond and Tweed River districts, part of the Upper North-East Region of New South Wales (Stubbs 1998; State Forests of NSW 1999). Here, the tree-to-corner distances for brush and open-forest are distributed around means of 4.0 metres and 7.7 metres respectively (Figure 4).

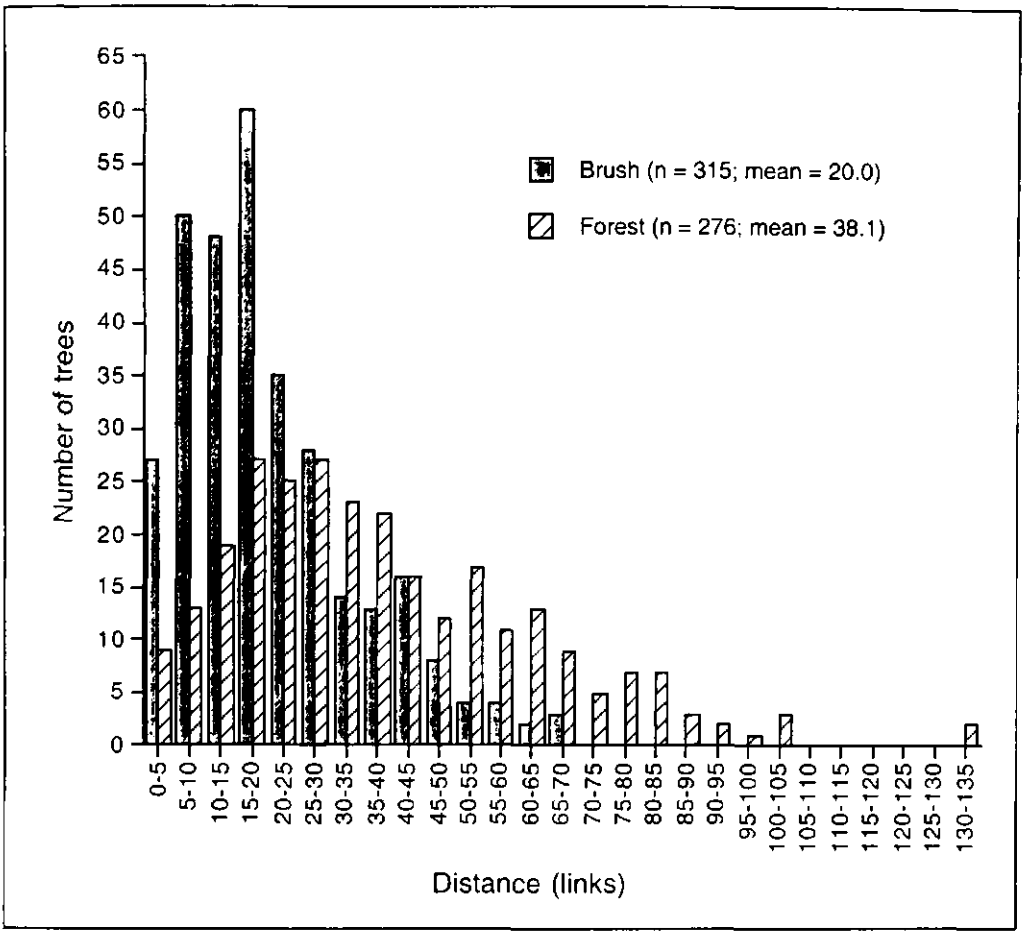


Figure 4: Distribution of tree-to-corner distances for brush (closed-forest) and open-forest from randomly selected portions within the Upper North-East region of New South Wales.

The aim of the present exercise is to take this matter further, and to apply historical tree-to-corner distances to the estimation of the tree density of former sub-tropical rainforest (brush) lands of north-eastern New South Wales. The reason for making the brushes the subject of an exercise in historical reconstruction is threefold. First, their value for agriculture, by virtue of their accessibility (in the case of the riparian brushes) and their apparently great fertility, ensured the early and virtually complete elimination of this vegetation type in the northern rivers region of New South Wales. Few remnants of this vegetation remain, therefore, to aid in the determination of its original characteristics (including its distribution, floristics, and structure). Secondly, we have gathered a large quantity of historical data for parts of the Richmond River district where brush was the main vegetation type, as part of a reconstruction of the vegetation of several parishes in this district (this is in addition to the data referred to above in

Figures 3 and 4). Investigating the utility of tree-to-corner data for estimating tree density is a logical extension of this historical mapping project. Thirdly, data from modern ecological surveys are available with which to compare the results of the historical exercise (Connelly and Specht 1988).

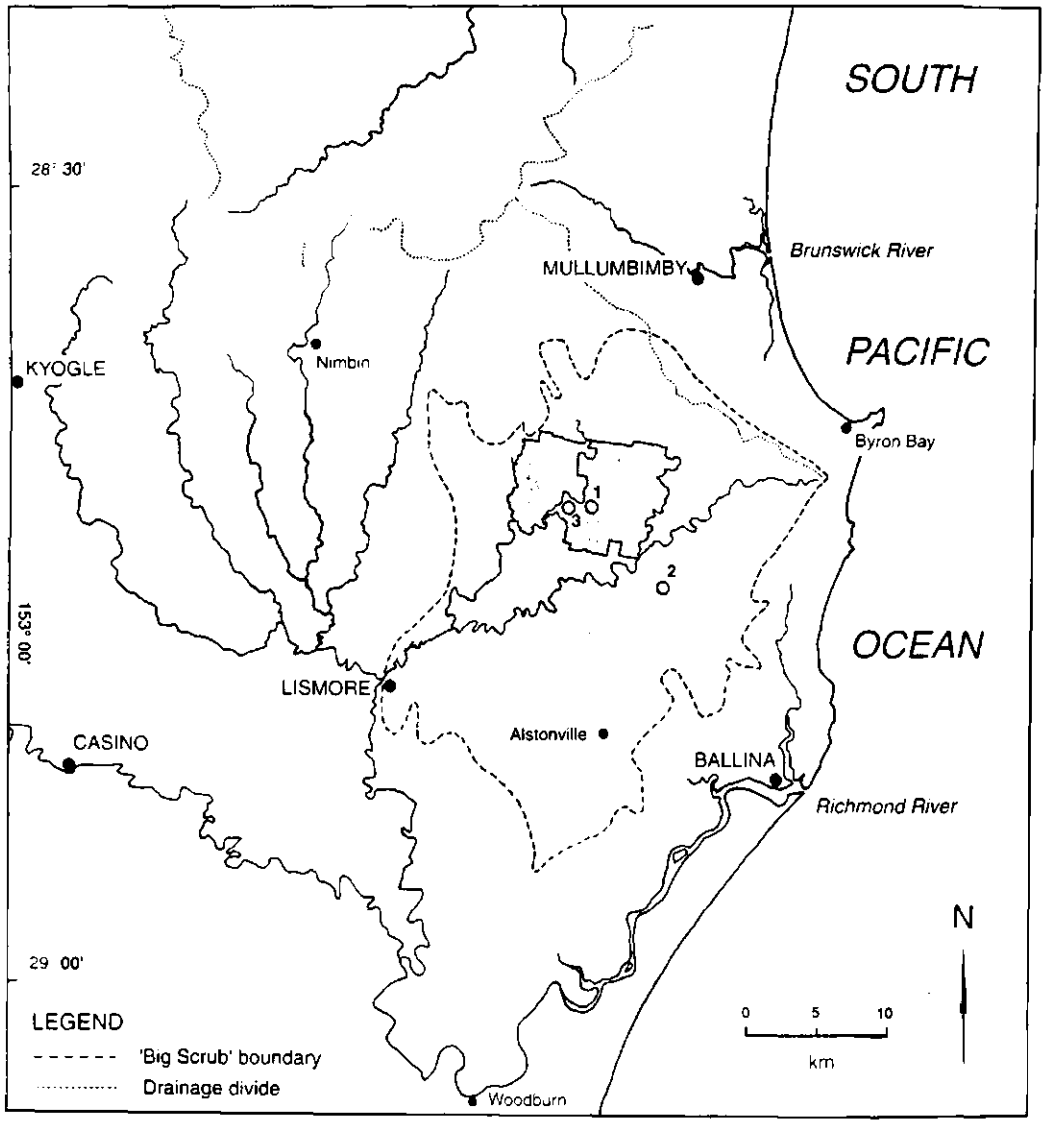


Figure 5: Map of the Richmond River district, showing the presumed boundary of the Big Scrub, and the location of Parish of Clunes (shaded area).

Note: Numerals 1, 2 and 3 refer to Johnson's Scrub, Emery's Scrub, and Morton's Scrub respectively.

Big Scrub

The term 'Big Scrub', and similar names such as 'Big Brush' and 'Great Scrub', have at various times been applied generally to the entire stretch of country between the Richmond River and the Queensland and New South Wales border and comprising much of the combined catchments of the Tweed, Brunswick and Richmond Rivers. More commonly today, however, the term is understood to apply specifically to that part of the Richmond River catchment situated between the towns of Ballina and Lismore and stretching from near the Richmond River in the south towards the Nightcap Range in the north, an area of around 700 square kilometres (Figure 5) which was once covered more-or-less continuously with sub-tropical rainforest (Stubbs 1996, 1999).

The Parish of Clunes, having an area of about 78 square kilometres, is situated towards the northern edge of the Big Scrub (Figure 5). Apart from three small areas of grassy open-forest (Stubbs 2001), covering only about 30 ha, or less that 0.4 per cent of the parish, the original vegetation of the entire parish was unbroken sub-tropical rainforest, described by the surveyors variously as 'dense brush', 'very dense brush', 'dense scrub', 'cedar scrub', and 'dense cedar scrub'. The parish can therefore be considered to be 'core' Big Scrub, and to be representative of the larger area. In addition, the land in the Parish of Clunes was selected, and therefore surveyed, later than that in other Big Scrub parishes such as Teven and Lismore, making plans more readily available and generally more detailed and informative.

Methods

The use of tree-to-corner distances to estimate tree density is based on the application, effectively in reverse, of the 'closest individual' method of plotless sampling. Plotless sampling is normally used for the estimation of density in forest vegetation where it is practically difficult to demarcate the relatively large quadrats required for sampling trees (Cottam and Curtis 1956; Pielou 1959; Clark and Evans 1954). In the closest individual method, the distance is measured from each of a number of randomly selected points to the nearest tree. From these distances an estimate of density can be calculated (Greig-Smith 1964). In this historical context, the corners of the surveyed portions are assumed to represent randomly distributed points, and the trees chosen by the surveyors to mark them are considered to have

been the nearest suitable trees. The distinction between the nearest tree and the nearest tree suitable for use by the surveyor is considered later.

Our use here of the plotless sampling techniques to estimate historical tree densities is not novel. In the 1940s, Cottam used the random pairs method to calculate the density of an oak woods in south-western Wisconsin at the time of its original survey in 1833-34 (Cottam 1949; Cottam and Curtis 1949). Much more recently in Australia the closest individual method has been used to estimate historical tree densities in the grassy forests and woodlands of the lowland Gippsland plain in eastern Victoria (Lunt 1997b) and in a remnant coastal woodland on the Bellarine Peninsula in southern Victoria (Lunt 1998). Fensham and Holman (1998), working in Queensland's Darling Downs, urged caution in the use of tree-to-corner distances to measure historical vegetation density. These studies prompted us to revisit the topic in north-eastern New South Wales, focusing on that region's sub-tropical rainforests, and paying particular attention to interpreting the results in terms of the history of survey practice.

The methods adopted for this exercise are based on Cottam and Curtis (1956) and Cottam et al. (1953). Essentially, Cottam et al. (1953) demonstrated empirically that the mean of the distances between sampling points and the closest individuals equals 50 per cent of the square root of the mean area (see also Clark and Evans 1954). As mean area is the reciprocal of density, it follows that: density = $0.25/(\text{mean distance})^2$.

Tree-to-corner distances were assembled for 302 corners from all portions in the Parish of Clunes. Of these, 301 were within brush vegetation. This understanding is based on the surveyors' descriptions of (i) the vegetation at the time of survey ('dense brush', 'very dense brush', etc.), and (ii) the type of tree used as the corner reference. Individual trees were most often described simply as 'brush', but sometimes a more specific descriptor is used, such as 'bean' or 'cedar'. Only one corner in this parish was in a vegetation type other than brush, namely, a small patch of grassy open-forest.

For comparison, tree-to-corner distances in both 'brush' and 'forest' vegetation were extracted from data in Ryan and Stubbs (1996) and from unpublished data for randomly selected corners in 47 parishes in the Clarence, Richmond, Brunswick and Tweed River districts (part of the Upper North-East Region of NSW; see Stubbs 1998). For all corners where there was 'no tree near' (e.g. Figure 2), that is, where no suitable tree stood within an appropriate distance of the corner, it was assumed that the nearest suitable tree would have been one chain (about 20 m) distant from the corner. This applied to only 6 of 301 corners in the Parish of Clunes; 2 of 315 in the Upper North-East brush; and 3 of 276 in the Upper North-East

forest. All five resulting data sets were compared using one-way analysis of variance in the Statistical Package for the Social Sciences (SPSS) followed by a comparison of the populations using Tukey's Honestly Significant Difference test. The 'estimated marginal means' generated by SPSS were used in the calculation of tree density.

The historical estimates of stem density were then compared with actual densities of trees in remnant areas of sub-tropical rainforest. Data from plots in three Big Scrub remnants (Johnson's Scrub, Emery's Scrub, and Morton's Scrub) within and near the Parish of Clunes (Figure 5), and in a sub-tropical rainforest at Mount Glorious, about 35 kilometres north-west of Brisbane in south-eastern Queensland (and about 160 kilometres north of the Parish of Clunes) were used to obtain the modern comparisons.

Where specific names were given by the surveyor of trees used as corner references, these names were recorded for the purpose of determining something of the floristics of the Parish of Clunes brush.

Results

The results of comparing the five data sets using one-way analysis of variance and Tukey's post-hoc tests were:

- the three brush areas were not significantly different from each other ($p<0.0001$);
- the two forest areas were significantly different from each other ($p<0.05$); and
- the brush areas were significantly different from the forest areas ($p<0.0001$).

A graphical comparison of the estimated marginal means shown in Table 1 is displayed in Figure 6.

Application of the closest individual method to tree-to-corner distances in all five data sets, using estimated marginal mean values generated by SPSS, yielded the tree densities shown in Table 1. For the Parish of Clunes, a density of 141 trees per hectare was calculated. This compares with 155 for the Upper North-East brush and 248 for the Lower Richmond River brush. Substantially lower values of density were obtained for forest vegetation in both the Lower Richmond River and Upper North-East regions (32 and 43 respectively). The actual densities of trees in remnant areas of sub-tropical rainforest vegetation, determined for comparison with the results obtained from the historical data, are given in Table 2.

Table 1: Historical tree density of brush (3 areas) and open-forest (2 areas) in north-eastern New South Wales.

Location	Number of corners n(i)	Number of trees n(f)	Mean distance (m)	Density (trees/ha)
Parish of Clunes brush	301	294	4.2	141
Lwr Richmond brush	69	69	3.2	248
Upper North East brush	315	312	4.0	155
Lwr Richmond forest	108	108	8.9	32
Upper North East forest	276	273	7.7	43

Note: n(i) is the total number of corners in each initial data set; n(f) is the final number of trees in each data set after deletion of outliers prior to analysis.

Table 2: Actual tree density of remnant subtropical rainforest in north-eastern New South Wales (3 areas) and south-eastern Queensland (1 area)

Location	Sample area (ha)	Tree density (number/ha)		
		> 30cm dbh	> 40cm dbh	> 10cm dbh
Johnson's Scrub	0.1	140	80	380
Emery's Scrub	0.1	160	90	320
Morton's Scrub	0.05	280	180	540
Combined Big Scrub	0.25	176	104	388
Mount Glorious	1.0	140	95	1094 *

Source: Big Scrub remnants—unpublished data collected in connection with Connelly and Specht (1988); Mount Glorious—unpublished data collected in connection with Hegarty (1988). * > 20 cm gbh = 6.4 cm dbh.

Finally, of all the 295 brush corners within the parish which had trees as references, 264 of these trees were described simply as 'brush' (and in one further case an unidentified stump was used as the corner reference). In only 30 cases (10 per cent) were more specific descriptors used. These vernacular names are listed in Table 3 along with their probable botanical equivalents.

Table 3: Interpretation of the vernacular names of trees used as corner references in the Parish of Clunes brush.

Name on plan	Number of trees	Proportion of reference trees (%)	Probable identity
Ironwood	15	5.1	*Austromyrtus acmenoides*
Bean	11	3.7	*Castanospermum australe* (black bean)
Booyong	2	0.7	*Heritiera trifoliolata*
Cedar	1	0.3	*Toona ciliata* (red cedar) or *Melia azedarach* (white cedar)
Mahogany	1	0.3	*Geissois benthamiana* (brush mahogany), *Dysoxylum fraserianum* (rose mahogany) or *Dysoxylum mollissimum* (miva mahogany)
Total	30	10.2	

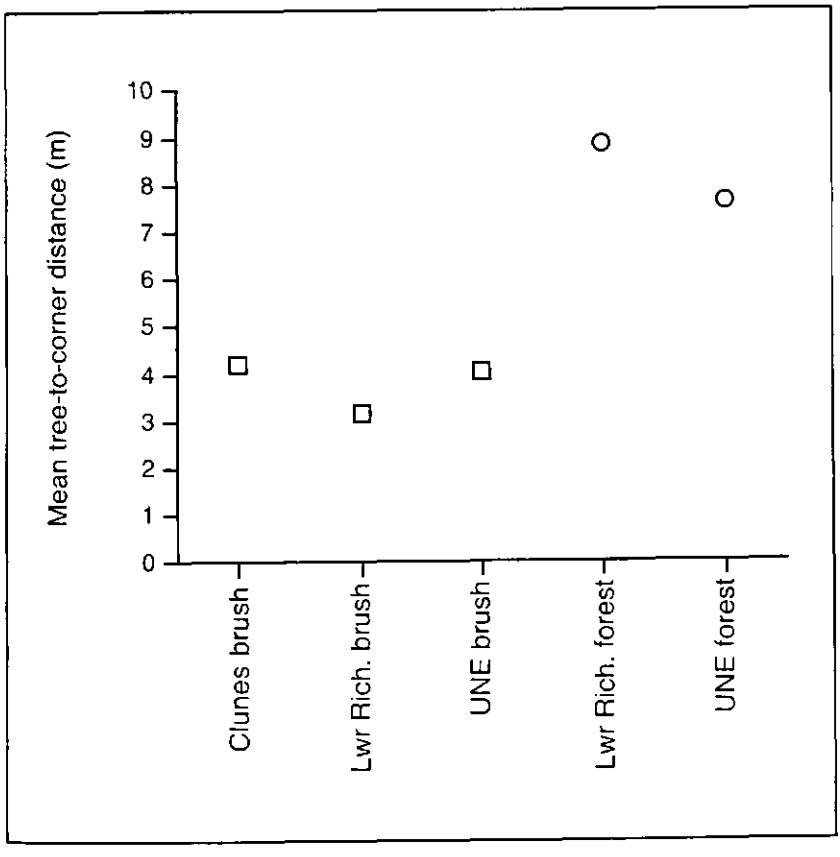


Figure 6: Mean tree-to-corner distances for 3 brush areas and 2 open-forest areas in north-eastern New South Wales

Discussion

In order to understand the meaning of the historical tree densities reported in Table 1, it is essential to consider the surveyors' purposes in selecting trees as corner references. Some important considerations were (i) permanence, (ii) stability, and (iii) visual prominence. In the first case, trees of great commercial value might be avoided in favour of species that were less likely to be removed for timber (despite government survey marks being protected by law). Long-lived and durable species might be favoured over short-lived species. Despite the intentions of surveyors to select trees likely to remain as references for the longest possible time, such factors as premature death or illegal removal often rendered the lifespan of a survey mark unforeseeably brief (e.g. Williamson 1984).

The need for stability (e.g. minimal tendency to lean or sway) and visual prominence (to facilitate relocation of corners) led to the selection of large rather than small trees, as did the need to cut a shield of sufficient size to contain the requisite broad arrow and portion numbers. Trees of great age and size, although suitable in most respects, might be avoided because of their limited remaining life.

In general, a tree of greater diameter than 30cm, if not 40cm, would satisfy the above requirements (pers. comm., Bert Hurcum, Staff Surveyor Grade III, Department of Land and Water Conservation, Grafton, 19 December 2001; Bill Kitson, Senior Curator, Museum of Lands, Mapping and Surveying, Brisbane, 1 February 2002). In view of this, the density figures derived from surveyors' tree-to-corner distances can be interpreted to represent the density of trees greater in diameter than about 30 or 40cm.

This conclusion is supported by the actual densities of trees measured in remnant areas of similar vegetation. These areas consisted of three remnants within and near the Parish of Clunes, and a sub-tropical rainforest in south-eastern Queensland. The measured densities of trees greater in diameter at breast height than both 30 centimetres and 40 centimetres for these areas of rainforest appear in Table 2. A graphical comparison of the estimated historical densities for three brush areas with the actual densities of Big Scrub remnants (three sample areas combined) and rainforest at Mount Glorious is shown in Figure 7.

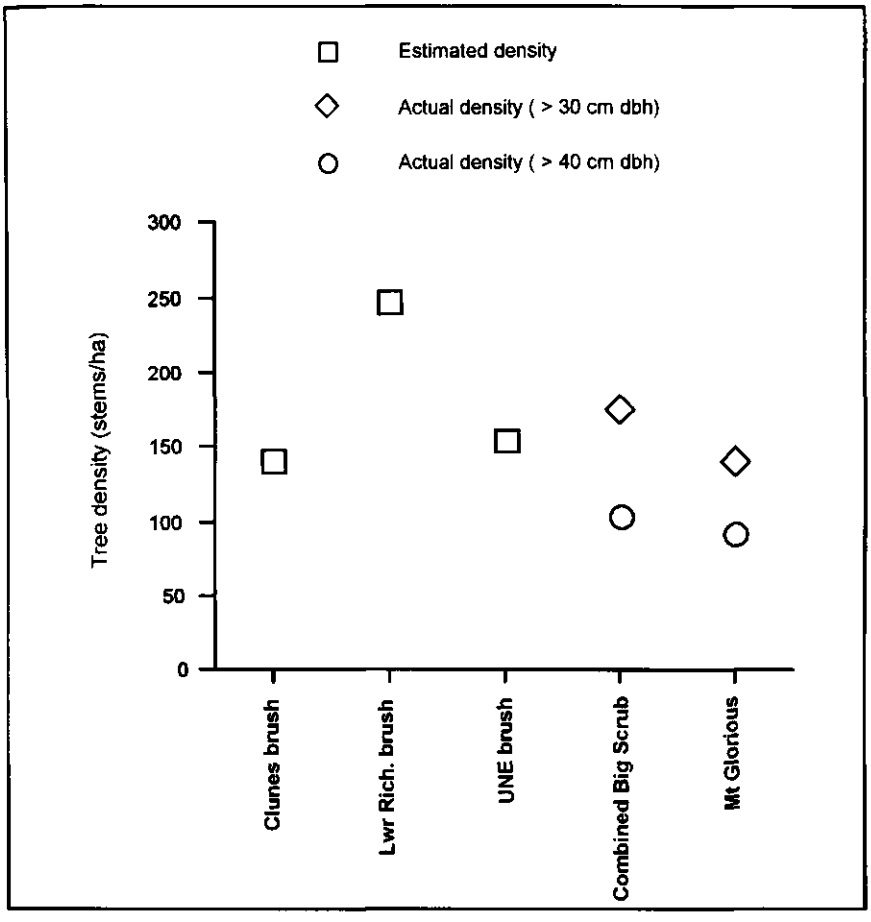


Figure 7: Comparison of estimated and actual densities for brush in north-eastern New South Wales.

Note: 'Combined Big Scrub' is density of combined sample areas in three remnants.

The estimated tree density for the Parish of Clunes (and for the Upper North-East region brush): (i) falls between the actual densities for trees greater than 30 centimetres and greater than 40 centimetres in diameter in the Big Scrub remnants; and (ii) is close to the density of trees greater than 30 centimetres for Mount Glorious. Although the estimated density for brush in the lower Richmond River area is greater than the actual densities plotted, it is in fact less than the actual density of trees greater than 30 centimetres in diameter in one of the three Big Scrub remnants (Morton's Scrub; Table 2). These results strongly support our interpretation of the historical densities calculated from tree-to-corner distances, and our contention that trees 'suitable' for use as reference trees were those greater in diameter than about 30 or 40 centimetres.

Using a similar technique, Lunt (1997b, 1998) obtained lower-than-expected tree densities for grassy forests and woodlands on the lowland Gippsland plain and in a remnant coastal woodland on the Bellarine Peninsula, both in Victoria. Lunt commented briefly on the low magnitude of his results in terms of the possible selection of large, distant trees over smaller, closer ones, and the possible avoidance of certain species. He failed to consider, however, as we have done here, what his results really meant in terms of the practical requirements of a reference tree. Doing so may have made them more explicable.

We have alluded above to the use of survey records as a source of information about the floristics of former plant communities. Little could be discovered in this regard in the Parish of Clunes where only 10 per cent of corner reference trees were given more specific descriptors than just 'brush' (Table 3). This probably reflects both the surveyors' lack of familiarity with this type of vegetation, and also the difficulty of identifying individual trees in a tall (20-25 m) and dense (Foliage Projective Cover >80 %) community of high diversity (around 90 tree species per hectare). Furthermore, the naming of these particular trees may be a reflection more of their familiarity to the surveyor and their suitability or perceived suitability for the purpose, than of their abundance within the brush. Little can therefore be concluded from this scant information about the species composition of the vegetation. Such an exercise is likely to yield better results in open-forest areas where species richness is much lower.

Conclusions

The plans on which are recorded the information used in this and other similar studies represent an invaluable historical resource for understanding Australia's pre-European forests and landscape. Such plans have been used in numerous localities, at a range of scales, and in numerous different ways (e.g. vegetation mapping, assessment of structural attributes, determination of floristic composition), and with variable success. In this paper we have concentrated on one particular aspect of the survey record, tree-to-corner distances, applied to the estimation of tree density. This paper augments the growing literature on the practical uses of the survey record in vegetation reconstruction, and its results advance knowledge of the former Big Scrub. In particular, they (i) support the utility of corner tree records, and allow the closest individual method to be used with greater confidence in other studies to estimate tree density, and (ii) reinforce the belief that the three remnants used in this study are indeed representative of the wider Big Scrub

vegetation, and therefore increase the certainty with which they can be used as standards for the restoration of nearby cleared land.

Acknowledgements

Data for this study were mostly taken from plans examined at the Department of Land and Water Conservation, Grafton. Access to these was facilitated by Bob Fish (District Manager, Land NSW) and Michelle Hurcum (Lands Officer). Bert Hurcum (Staff Surveyor Grade III, Land NSW, Grafton) and Bill Kitson (Senior Curator, Museum of Lands, Mapping and Surveying, Brisbane) gave advice on the practical aspects of tree selection and survey procedure. Dr Elwyn Hegarty provided unpublished data from her studies of rainforest at Mount Glorious.

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18

Long Creek: from logging to World Heritage

Jane Lennon

Turn off the Summerland Highway at Old Grevillia and drive north along the narrow bitumen strip, cross the Richmond River and turn right at Terrace Creek and continue on the dirt road in a north easterly direction until you have passed all the farms and come to the end of the road. Across the creek you will see a sign, 'Long Creek Fire Trail', and a few tall cypresses in a flat grassy area in the middle distance before the forest takes over. It is a remote and forgotten area returning to Nature. However, Long Creek was a sawmill settlement for 25 years and the complete lack of relics of the intense life of the villagers over three decades testifies to the ephemeral impact humans have on the wet environment of this forest region. Without the survival of forest management records and the oral histories of former residents, the casual visitor could be forgiven for believing that this is an abandoned farm paddock surrounded by untouched remnants of the relict rainforest from Gondwana.

Long Creek is located in New South Wales on the southern side of the Border Ranges National Park, which covers 31 683 hectares and is the largest component of the parks and reserves of the Tweed caldera (a basin-shaped crater with steep cliffs formed by an eroded volcano). They abut each other and form a geographic unit along the McPherson Range across

the New South Wales-Queensland border. Kyogle is the nearest major town in the Richmond River valley.

The Long Creek area of the Roseberry State Forest of northern New South Wales had a timber tramway operating from the 1920s to 1947. In 1983 the site became part of the Border Ranges National Park which in turn was included in the 1986 listing of the Central Eastern Rainforests Reserves of Australia as a World Heritage property. The New South Wales National Parks and Wildlife Service plan of management for the park has part of this area as a wilderness zone. A recent conservation management plan examined the cultural significance of the Long Creek site and recommended policies to deal with the conflicting management objectives (Lennon 2001). Research for this plan uncovered logging records and photographs of forest utilization and recorded oral histories.

Natural values

The parks and reserves of the Tweed caldera are of international significance having been listed as World Heritage as part of the Central Eastern Rainforest Reserves of Australia in 1986. The area has outstanding universal values and satisfies three of the four natural criteria for World Heritage listing as: a record of the Earth's evolutionary history; outstanding examples of ongoing geological and biological processes and, significant areas for the conservation of biological diversity, including threatened plants and animals.

The area contains the best living record of examples from the second wave of flowering plants which led to the radical shift in the world's vegetation. For some 50 million years two taxa, *Nothofagus* and *Araucaria*, were its characteristic components. It is the only part of Australia where rainforests containing these genera coincide. As well as the outstanding natural values of universal significance, there are other natural values. The diverse flora of about 1700 species of vascular plants recorded, of which about 150 species representing 100 genera are restricted to the property and of these, 100 species are restricted to or have major occurrences in the Border Ranges area. The parks are of regional landscape significance providing a mountainous backdrop to the major northern coastal towns. They also provide an integral component of the nature-based tourism and recreation opportunities in the region.

Cultural values

The spectacular landscape of the Tweed caldera has value for Aboriginal people in the region. It was also seen as a resource base for European settlers in the nineteenth and twentieth centuries. The pastoral and agricultural settlement, and the timber industry have resulted in cultural heritage values.

Aboriginal history

The landscapes of the Tweed caldera are part of the identity, spirituality, connection and resource base for the local Aboriginal people including the Coodjingburra, Galibal, Gidhabul and Widjabal peoples. They contain a complex network of mythological and significant sites which are closely interconnected with their Dreaming (NSW NPWS 2000a: 5). Aboriginal people have worked in the forest industries in the district throughout last century. The Githabul Nation claim (NC 95/11) which includes the Border Ranges National Park is the only currently registered native title claim over the area.

European settlement

On a State or regional scale, the lateness of closer settlement and the primitive technology of the logging industry in this district stand out. Long Creek had the last licensed timber tramway in New South Wales. Although cedar cutters had been at work along the Richmond River since 1842, the towering peaks of the McPherson Range still appeared to be untouched by the hand of man in 1870. However, in 1875 the first sawmill opened at Lismore and in a short time the forest country around Roseberry and Kyogle had been invaded by an army of workers, often helped by Aborigines, and long processions of bullock teams hauling logs of cedar and pine could be seen slowly making their way towards Casino (Daley 1966:130). The timber industry in the upper district prospered during the 1880s and 1890s.

The Roseberry Pastoral Plan (Run No. 422) of 1885 shows the forest reserve and notes that it is 'covered with permanent scrub'. It also shows the location of a Water Reserve 1114 on Long Creek, which at that point is misnamed and the upper reaches are shown by dotted line presumably not having been surveyed.

Forest reservation

The first selectors only took up land in 1905 at Terrace Creek. By 1912, Homestead Selection areas were being taken up in the next valley of Grady's Creek. However, the timber industry also held a firm position in the district. In 1918 there were six mills operating in the Upper Richmond valley. Munro and Lever had established themselves around Grevillia, logging mainly soft-woods for use in the butter-box contract which had extended to 48 000 boxes by 1921, by which time three more mills had been established in the area and they collectively were employing 200 teamsters hauling logs and timber, 100 men in the mills and another 300 men were bush workers (Martin 1988:53).

There were others interested in conserving the timber resources of the district. Surveyor Corlis and District Forester Boyd, of Casino recommended on 12 June 1916 that Forest Reserve 10723 be made a State Forest. They described it as very steep and difficult country for agriculture but excellent forest:

> *Access*: Partly formed road from Kyogle 22 miles then about 4 miles by old tracks used years ago by cedar getters...
>
> *Carrying capacity*: In its present state about 1 beast to 150 acres, parts of which could be improved but not profitable owing to the rugged nature of the country.
>
> *Water Supply*: Permanent in the heads of a number of creeks.
>
> *Timber*: Large quantities of marketable pine, teak, rosewood, beech, cudgeriem longjack, cedar and other softwoods are growing in this area, the hardwoods consist mainly of brush box, tallow wood, grey gum, blue gum and ironbark. This reserve forms one of the chief sources for the supply of hoop pine in this part of the State.
>
> *Access to timber*: Access is rather difficult. To fully work this reserve a considerable amount of road construction would be necessary.
>
> *Requirements of timber industry:* There is a keen and increasing demand for timber, particularly good soft woods, in this district.
>
> *Demand*: This area is too mountainous to be suitable for settlement (State Forests file 608, misc 15/6915).

Reservation occurred the following year (1917) and forest rangers were appointed to oversee the cutting of timber, to collect royalties from sawmillers and to conserve the forests. As well as this pragmatic desire to ensure continuity of timber supplies, opinions favoured protecting the natural beauty of the area. On the Queensland side of the border,

Lamington National Park was dedicated in the 1920s although it had been under protection since 1915 (Martin 1988:53-4). The Border Ranges National Park dedication had to wait until 1983 as the priority of the district was farming settlement and opening up areas for logging.

Timber extraction

Figure 1: Briany O'Neill's team of 14 bullocks near the Double Huts at junction of Long Creek and Right Hand Branch, early 1930s.

Revenue and yield data are available for Roseberry State Forest from 1922 until 1964 and specifically for the Long Creek compartments from 1929 until 1964. It has been estimated that the three mills owned by Munro and Lever at Grevillia, Terrace Creek and Long Creek were cutting as much as 35 000 super feet [83 cubic metres] per day at their peak. They were cutting pine for 32 years continuously and are estimated to have cut 112 million super feet [264 000 cubic metres]. Over the years the mills employed 600 or so people (RRHS, List of Kyogle businesses, vol 1:79).

Walter Lever had bought Pidcock's mill at Terrace Creek and logs were hauled there from the surrounding Roseberry State Forest by bullock wagon. However, Lever had supply problems as 'wet and muddy weather' made haulage by bullock team extremely difficult (Vader 1987:116; Rutley 1977).

In 1918 he sent his son, Jack to inspect tramways being used to haul timber in the wet forests of Victoria around Warburton. Jack returned without actual plans but with enthusiasm for their construction. Lever approached the Forestry Commission for supplies of brush box, royalty free so that he could construct the tramway. This was granted and construction commenced at the end of 1918 at the southern point of Roseberry State Forest where Long Creek emerges. Despite the hardships, about 1.5 kilometres was completed during 1919 and timber extraction began.

On 18 December 1927 the Terrace Creek mill burnt down and a new mill was constructed in 1928 by Levers at Long Creek so that logs would not have to be hauled so far by horse and bullock teams. At this time Jack Lever introduced a petrol-driven Linn tractor and jinker to his operations and modified them to suit the timber-railed tramway. However, the advent of the tractor meant that work had to be carried out on the tramway. New track was required with sleepers spaced approximately 2 feet 6 inches [760 mm] apart, bridges were strengthened, replaced or removed. Flooded Gum replaced Brush box in the construction of bridges in keys, bed logs, runners and girders, and in rails and sleepers. All timber was milled at Long Creek for this purpose. Rails were cut in two sizes: 4 inches by 3 inches [100×75 mm] for the curves and 3 inches by 3 inches [75×75 mm] for the straights. On the majority of the curves a safety rail was laid to prevent the tram leaving the tracks. These rails were iron-spiked to the sleepers and the gauge of the track was 3 feet 6 inches. The bridges were stayed against fast flowing flood water and the uprights had cement bases for supposed extra strength.

In 1930 the Forestry Commission granted a permit for the tramway which was then 6.7 kilometres long (Grant 1988: 298). As logging progressed, the tramway was extended to the junction of Long and Levers Creeks, and branch lines were constructed along Right Hand Branch and Surveyor's Creek, giving it a total length of about 13 kilometres (Rutley 1977). However, the Newman brothers assert that the tramway never went into Surveyors Creek but continued north-west towards the falls along the main Long Creek which was referred to locally as 'Western Creek.'. Photographs show construction of new tramline in Western Creek below the edge of the plateau.

When World War II was declared, work had already started on constructing a line onto the unlogged plateau. Lever possibly planned on using an incline tramway system, but the work was abandoned when the men left for the War. The base of Long Creek Falls was the furthest extent of the tramline. The 13 kilometre tramway had 4 turntables and 25 bridges, big ones with 3 spans compared to lots of little ones over washaways. There

were 7 hauler sites in the surrounding forests. There is some evidence remaining of the bridges, usually in the form of a girder or spike, on the top side of the tramway system. There is a girder opposite Polly Witten gully and another from Lone Pine bridge against a tree there.

Both sides of Long Creek valley were logged at the same time. There were 5 bullock teams of 6 bullocks. On the left hand side they were unyoked and turned out to graze overnight on 'Dandy grass' at Bullock Road flat; on the right hand side they grazed at Lemontree Flat which was all grass round to Palm Gully. Bullocks finished at Double Huts. A 30 horsepower kerosene tractor worked Levers Creek and Right Hand Branch pulling logs to the tramway, then the 40 horse power caterpillar hauled logs to the skids then onto the tram. A big hoop pine could have 7500 super feet of timber [22 cubic metres] in it and the mill would cut up to 20 000 super feet [47 cubic metres] a day. Wages were originally 1 shilling for every 100 super feet, then 12 shillings per day.

Mill and village

The mill was the heart of the operations. The tramline terminated in the log dump in the mill yard. Jack Lever was the 'sheriff' as well as the mill boss and engineer. He was strict about work rules and hated unions. They all worked a 5½ day week, until Saturday lunchtime.

The mill was powered by a Tangye steam engine made in Birmingham and originally from the Broadwater sugar mill; the fly wheel was 14 feet [4.2 m] across and it had a 3 foot [910 mm] stroke and 14 inch [356 mm] bore. Bert Newman was the fireman and engine driver. Below the water tanks adjacent to the mill were hot and cold showers for the use of the village residents on week days. The steam was turned off at 9.00 p.m. The mill whistle regulated life in the village from the start to the working day, smoko, meal breaks when men came home for lunch, and knock off time.

The village was laid out with 11 houses in a row, then a shed, store and school at the south end near Lemon Creek. Across the main through road were the tennis court and school teacher's house below the central sawmill; then to the north east were the single men's huts with a dining room at one end and clothes line; above this to the north were the oil shed and Lever's office. Other houses were located on the second flat north of Long Creek.

The unpainted timber houses all along the main road to the mill were all built by the mill employees and then Munro and Lever charged 5 shillings per week rent. Kerosene lamps provided the lighting until the electric power was connected in 1948. Houses were enclosed by picket fences and each had a yard. Every house had chickens for eggs, and chicken meat on Sundays or

special occasions. There were house cows milked by the wives and also a lucerne paddock for the cows and chooks. Fresh meat came from Kyogle in winter but storage was a problem in summer and corned beef was the main diet supplemented by fish caught in Long Creek and its tributaries and by bush turkeys and pigeons shot in the bush.

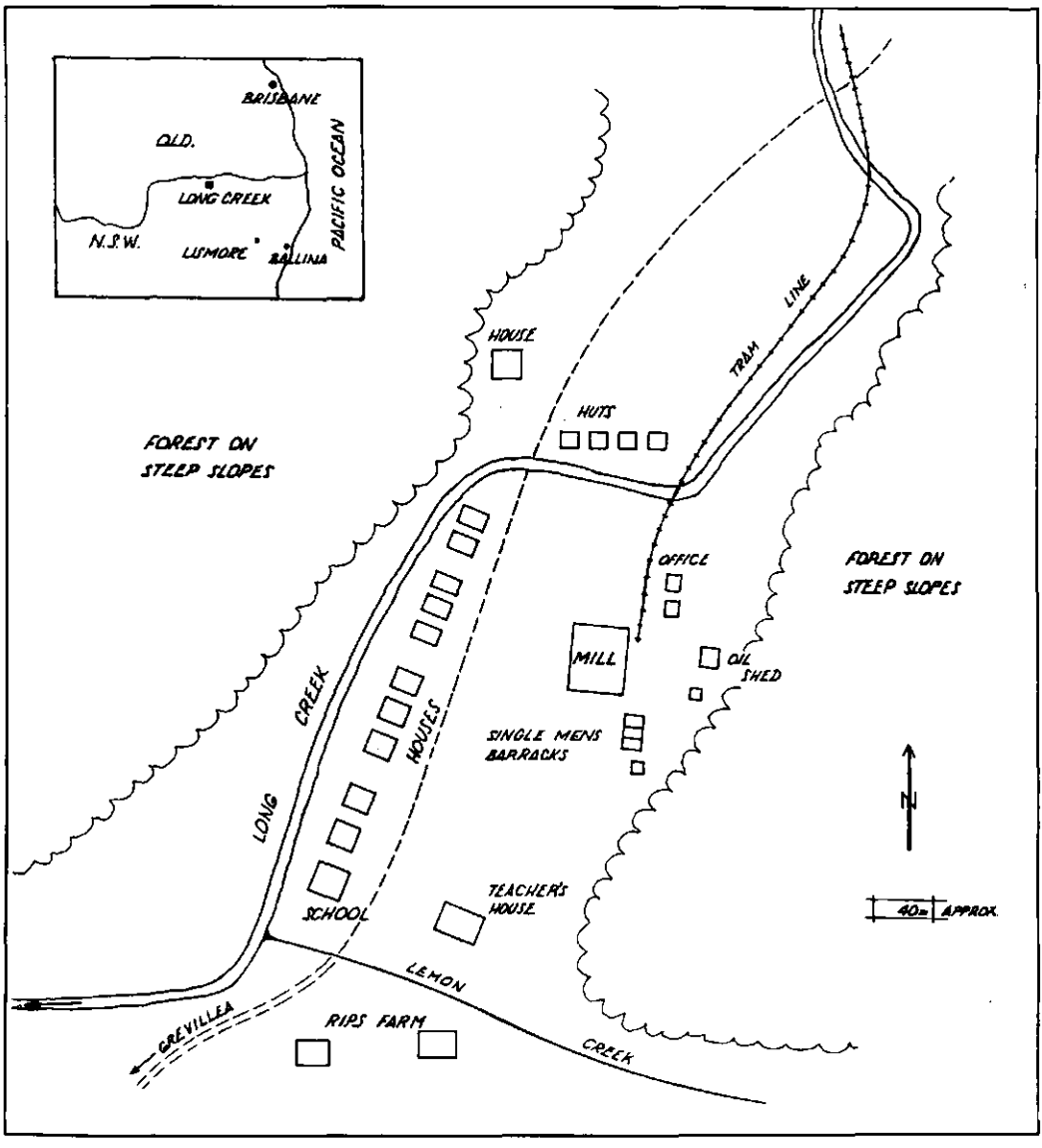

Figure 2: Long Creek Mill site.

At the outbreak of World War II, 14 men from the village enlisted and some from the fellers camps in the bush as well as several Aboriginal timber cutters. Younger boys then worked in the mill.

The oral histories collected provide much evidence of lifestyle: gardening, social activity, sports competitions between the different Lever mill communities in the district, school life for the 30 or so children and health care.

Post war changes

Road construction into the forest in 1947 caused the tramway to be redundant; then in 1954 a flood washed away parts of the tramway and all bridges between Long Creek mill and the highway. The mill closed and its machinery was re-erected in Kyogle, now the centre for Lever's operations. In 1958 the Long Creek mill houses were sold and school and settlement dispersed.

Today the village and mill site is evident only from the cleared area on the flat now being taken over by regrowth of scattered eucalypts and dense weed grasses. The tramway terminus could have been among a patch of tall scrub and mature trees at the northern end of the cleared area. Across Long Creek to the north is another 'paddock' (not in the park but freehold) of low regrowth, with exotic shrubs on the lower slope to the west; loquats, a mango, crepe myrtle and lemons were observed here in Livermore's 'Garden.' Lemons also survive along the east edge of the paddock on the creek bank. Then the creek is again crossed before the track starts to climb up the former road (1947 alignment) parallel to the tramway of which there is no evidence at this point. 'Sadly, in the course of construction of the road, most of the line and its bridges were destroyed' (Rutley 1977). The alignment of the tramway is occasionally visible in embankments and cuttings away from the banks of the creek which has changed course with successive floods.

Flood damage was extensive following both the 1954 flood and the massive 1978 flood. The latter followed a storm which dumped 383 millimetres in 3½ hours and created a wall of water said to be more than 6 metres high travelling down Long Creek and dumping uprooted trees two kilometres downstream of their location. The Long Creek Road was destroyed when the creek changed its course. Subsequently all housing and any building remnants were removed. Where the tramway alignment is surrounded by over-hanging mature forest and a dark forest floor, invasive Lantana is absent. However, hoop pine seedlings were observed to be regrowing in these sections. Decay of the track formation and crumbling of the alignment is therefore inevitable as time passes and the forest re-colonises.

Assessment of cultural significance of the Long Creek settlement

The assessment of cultural significance requires comparative analysis of other like places of the same period. Prior to motor truck haulage of logs from the forest to the mill, there were many tramways built by sawmillers in New South Wales State forests, especially along the coast (Grant 1988:293). The Forestry Commission issued 30 occupation permits for tramways between 1917 and 1930; number 3586 to Munro and Lever on 1 March 1930 for 6.7 kilometres in Roseberry State Forest was the last (Grant 1988: 296). Some of these tramways were located on land now included in National Parks: at Dorrigo where their alignments now form walking tracks down the escarpment, and at Middle Brother, Laurieton, where traces of the alignment remain in Dooragan National Park.

In Queensland there is also a history of timber tramways and the progression from water transport, as with Campbell's mill on Coochin Coochin Creek, to bullock teams and horse drawn trams then steam locomotives on steel rails, all well documented for the South East Queensland Regional Forest Assessment (Powell 1998). A specific study of sawmills and tramways in South East Queensland was undertaken by John Kerr in 1998. By the time the railway arrived at Canungra in 1914 log supplies were declining and Laheys decided against any further tramline extension and began improving primitive tracks into roads to tap areas of inaccessible timber (Kerr 1998: 226). The sawmill in what is now Mount Cougal National Park adjoining the Border Ranges dates from 1942 but had no tramline as road haulage was available. A sawmill also operated at Neranwood from 1923 until 1930 with a tramline running from Mudgeeraba rail siding and despite rural residential development in the area, the alignment is still evident in many places (Kerr 1998: 231, 237).

In Victoria many hundreds of kilometres of tramways remain in forests and parks. Some of these were originally timber tramlines, some steel railed operated with small steam locomotives. The Light Railway Research Society of Australia based in Melbourne has been actively documenting the lines, machinery and associated people for over 30 years (Light Railway Research Society of Australia 1974). The society has an extensive photographic archive. The Warburton district which Jack Lever visited in his tour studying timber tramlines is very well documented and photographs of many timber tramlines operating at the time of his tour, including incline tramlines, have been published (Winzenried 1986). Despite the history of devastating bushfires through this region, many tramlines remain, with extensive evidence of

settlements such as cemeteries, chimneys, weirs, building footings, sawdust heaps and garden remnants. Some of these lines are popular walking tracks in the National Parks of the central highlands of Victoria (Lennon 1998).

Figure 3: Houses at Long Creek with school teacher's house partly obscured by vegetation in foreground

The Long Creek timber tramway which operated between the 1920s and 1947 appears to be representative of the timber tramways in New South Wales State Forests. It continued in use longer than those in other parts of the State. Long Creek is unusual in that so little physical evidence remains. While the alignment through the rainforest is discernable in some places, in others it has been washed away by floods. There is no evidence of the timber construction of the tramway and the bridges. The site of the mill remains clear of regrowth, but there is remarkably little to show that a large mill and settlement was there as recently as 1954; no footings, machinery remains, chimneys or sawdust heaps, only some exotic trees. The subtlety of what remains at Long Creek reduces its ability to demonstrate the history of timber utilisation and the communities which lived at the site.

The following statement of significance was given in the conservation management plan:

> Long Creek mill, settlement site and tramway are significant because they contain evidence of the last operating timber tramway (1928-47) in the NSW timber extraction industry. In addition, the site has social

values for the former residents and aesthetic values as part of the Border Ranges landscape.

The cultural heritage values of the subject lands are of regional significance. As a result of the evidence collected to date none of the sites are considered worthy of a permanent conservation order under the provisions of the NSW *Heritage Act*. However, this evidence is subtle and significance is reduced because of this lack of physical remains of what was a representative timber milling settlement of the pre-World War II era in NSW (Lennon 2001: 46).

Conservation policies

A range of existing management policies apply to the Long Creek site as part of the Border Ranges National Park managed primarily in accordance with the objectives of the NSW *National Parks and Wildlife Act 1974*. The conservation management plan was undertaken to supplement these policies (Lennon 2001). In addition, the NSW *Draft Plan of Management for the Parks and Reserves of the Tweed Caldera* (November 2000) seeks to address the Australian World Heritage Management Principles set out in the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. These principles are in addition to World Heritage Convention obligations to ensure the identification, protection, conservation and presentation of the World Heritage values of the reserve. They include provision for community and stakeholder consultation, Commonwealth accreditation of State management plans, and environmental impacts of any actions that are likely to have a significant impact on World Heritage values.

The National Parks and Wildlife Service is responsible for administering the *Wilderness Act 1977* (NSW). Under this Act, the majority of the eastern Border Ranges National Park is already declared wilderness as the Warrazambil and Lost World Wilderness Areas. In addition, in the western Border Ranges, the catchment of Long Creek on the Levers Plateau is an identified wilderness area. Such areas must be managed to maintain their unmodified state, to evolve in the absence of human interference and provide opportunities for solitude and appropriate self-reliant recreation.

Conflicting management objectives and resolution

There is a current conflict of management objectives for the subject lands: their cultural heritage values have been identified and assessed as of regional significance. However, the tramway alignment is located in a proposed wilderness area where management is not to interfere with natural evolu-

tionary processes. *Wilderness Act 1987* assumes that there are no important cultural values in areas designated as wilderness. Resolution of these conflicting objectives is required if the cultural values of the lands are to be maintained.

Although the dominant values of the Border Ranges are their outstanding universal values for natural heritage criteria, their cultural heritage has regional significance. This should be acknowledged further in the current management planning revisions and any on-site interpretation.

The conservation policy should retain the regional significance of the sawmilling settlement. The exotic trees and shrubs remaining are indicators of previous European use and as they are non-invasive they should remain as indicators for those with a discerning eye. However, if the surrounding forest starts to colonise the flat by natural processes it is not necessary to remove this regrowth.

Specific features remaining such as the identified range of planted trees at the village, forest survey trees, ringbarked trees, stumps, log landings, tramway cuttings and boundary fences require on-site recording so that their historical uses and significance can be interpreted. Retention of a good example of a small group of ringbarked trees, notched stumps, log ramps and lettered trees in the former forest reserve is desirable. Each should be marked with a star picket and an identification plate and, if practicable, have a light fire break cut around them so that fire danger is reduced. In addition, the position of lettered trees should be recorded and the trees marked for preservation as they are becoming scarce. The site of the former settlement should be acknowledged by erecting an interpretive sign at the entry to the park, near the mature exotic trees marking the former school site. This sign should be durable (steel and aluminium) and contain a photograph of the village in its heyday and explanatory text and map of the tramline system. The actual sawmill engine site could be marked by a tagged star picket so that it is still visible amongst the regrowth.

Besides their intrinsic historical value, these relics of forest management are also useful as benchmark sites from which to monitor rates and type of change in the surrounding forest cover. A monitoring plot should be established so as to monitor annually the type, distribution and extent of regrowth of native vegetation on the former village site. The results would be interpreted as part of the implementation of the Regional Forest Assessment regarding conservation of archaeological evidence.

There have been several previous attempts to collect local history from oral records, letters and historical photographs, and to make this accessible to the public. Ranger Ross McKinney's notes in the local paper are one

example; but as organisations change administrative units, this material is lost or re-filed and no consolidated record is kept. This does not help public relations with the donors or their descendants and ill will results. It is also poor asset management.

Former residents remember fondly the 'back to Long Creek' that Parks Service put on for the Bicentennial in 1988. A similar occasion associated with the interpretive sign and/or booklet launch and/or the finalisation of the wider Border Ranges management plan which shows the Long Creek valley as a wilderness zone, may serve to highlight these policies. The current social values will not be maintained under the proposed wilderness management framework and the historical values will be obliterated over time. Currently only access by foot is allowed but the aesthetic experience is seriously impeded by the density of Lantana growing in the valleys making both access and viewing through it very difficult.

The forest history records give some indication of the selective cutting of rainforest timber species for over 50 years. Despite the annual logging returns by species cut and volumes on which royalties were paid, no compartment map was located to show the actual locations of the logged compartments. Such a map could be overlain with current GIS/aerial photo maps to illustrate regrowth which could be monitored as part of the condition reporting for the health of the World Heritage property. Using historical records is a necessary tool for forest managers to understand the dynamic processes of regeneration and regrowth of the forest, and the obliteration of relics of industrial occupation. However, for local residents the cultural values—social history and associations with the place—are paramount.

Acknowledgements

No sawmilling company records have been sourced for the Long Creek mill; however, oral histories of some who worked and lived there provide a picture of operations. Mr and Mrs J.P. O'Neill, Mr and Mrs Jim Shearman and Messrs John and Jim Newman gave their time and hospitality for interviews for this study. Without their assistance the report into life at Long Creek from 1929 to 1954 could not be written.

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19

Ecological changes to forests in the Eden region of New South Wales

Daniel Lunney and Alison Matthews

Introduction

The woodchip industry commenced exporting from the Eden chipmill in 1970 at the beginning of a period of unprecedented concern for the environment, and for forests in particular. However, the forests of the Eden region of south-east New South Wales had already undergone great changes over the preceding 140 years, primarily from the growth of agriculture. Our previous historical work in the Bega Valley (Lunney and Leary 1988) and Mumbulla State Forest (Lunney and Moon 1988) is extended in this paper to the entire Eden region, as defined by the Eden Management Area (State Forests of NSW 1994) (Figure 1). Our long-term objective is to understand the evanescent fauna of the region by catching glimpses of it in the historical record as it withdrew in the face of agricultural and industrial development. Our aim in this paper is to trace the changes in the pattern of forested habitats across the once-forested Eden region to the present fragmented forest-farm landscape.

An historical perspective of the region can view the turbulent conservation battles over the woodchip industry in the context of a nation that grew rich on exports from the land. Since European settlement, the region has

been a major exporter of natural products such as whales, wood and wattle-bark, of agricultural products from the coastal areas of Bega and of wool from the tablelands around Bombala. An ecological interpretation offers singular insights into current conflicts and enables a wildlife ecologist to reconstruct the faunal composition at first settlement in 1830, and estimate the subsequent rate of change. This study is constructed from academic sources, local histories, local stories and old photographs that bear witness to the land ethic of the pioneering period. It serves to explain the origins of the export woodchip industry and one of the greatest forest conservation struggles of the last decades of the 20th century which resulted.

Dick (christened Lilla) Rogers recollected that when she was a child 'the tree was the enemy' because trees 'had to be cleared' (interview by DL, 11 January 2002). She was born in Bombala in 1912 and left with her family for Sydney in 1925. Her childhood and formative memories reflect values of the end of the 19th and the early 20th century and her memory of that period has not been blurred by land-use changes or local politics. She reminisced that she had touched hands with people born in the early 19th century and thus her life had spanned almost all of the period of European settlement of Australia. The values and the struggles of a small country town on the eastern edge of the treeless Monaro plain and the western edge of the forested eastern escarpment provide a vital understanding of a local ethic of survival, resource use and attitudes to fauna. From the beginning, the constraints of geography, the difficulty of travel to the ports on the coast and the long distance to the capital cities were major economic determinants of the development of the Eden region.

Geography as constraint and opportunity

Lunney (2001) investigated the cause of the extinction of 24 species of mammals in western New South Wales, and concluded that the impact of ever-increasing millions of sheep on all river frontages, through all the drought refuges, and across all the landscape by the mid 1880s, was a sufficient explanation of this great mammal extinction. Of profound importance was the flatness of the region. It provided no impediment to rapid settlement nor any constraint on unfettered land use leading to rapid overuse. The swift settlement of the Bega Valley from the first introduction of cattle in 1830 was based on the same settlement principles, but the topographic relief of the Eden region is so pronounced that it enabled much of the forested land of the region to survive into the beginning of the 21st century. It was

the region's geography that contained settlement, not a desire to conserve the forests or the fauna.

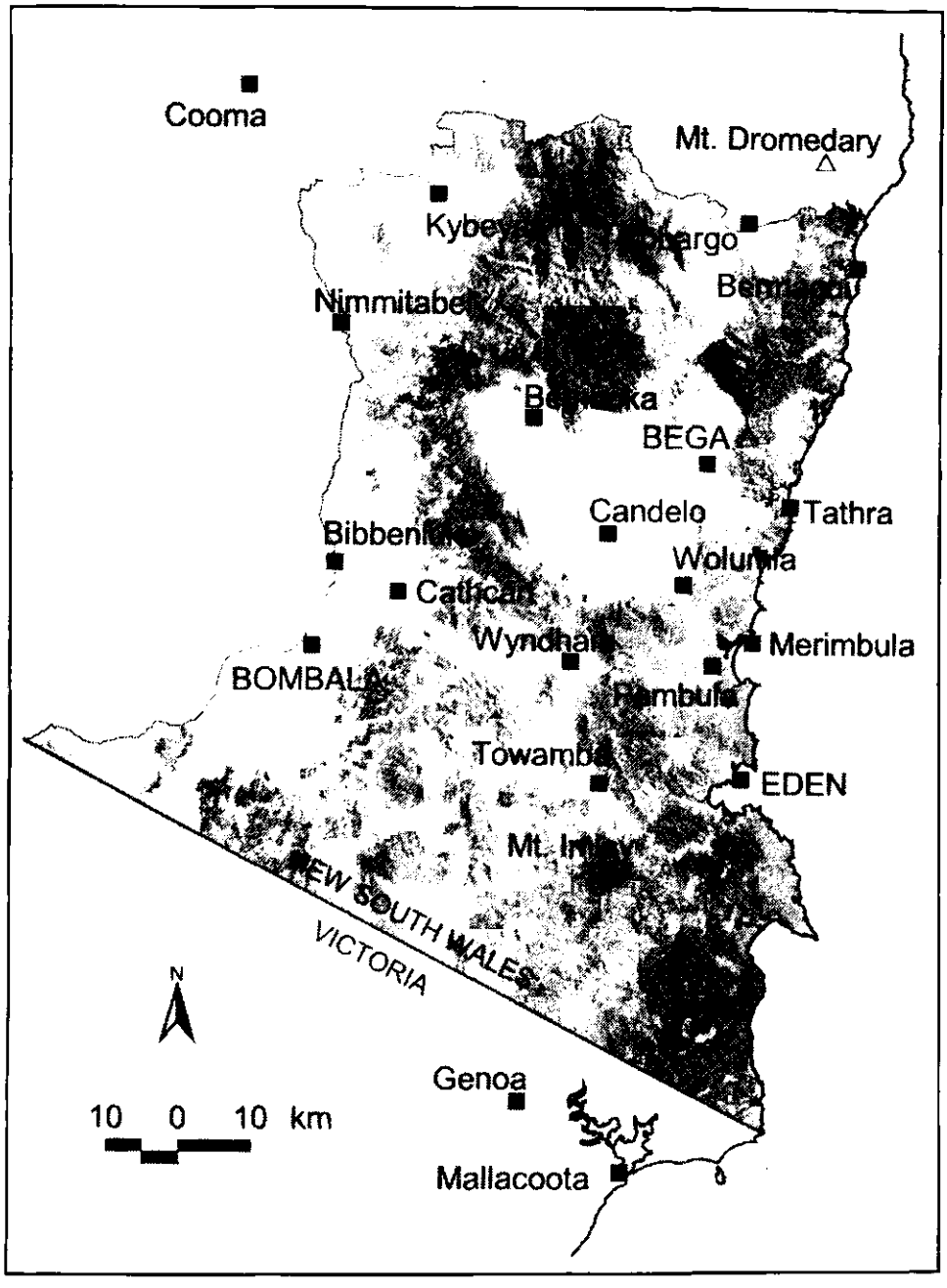

Figure 1. Eden region of south-east New South Wales

Settlement concentrated on the lands most suitable for grazing and intensive agriculture, such as crops and pigs, and in doing so it consumed almost all of the major vegetation types of the valley country, the fertile

sections along the coast and the edge of the tablelands. Most of the native vegetation in the Bega valley had been cleared by 1910 (Lunney and Leary 1988, Keith and Bedward 1999). When Lunney and Leary (1988) discovered that some native mammal species of the Bega district had become extinct, the explanation was found in the early and intense agricultural consumption of the valley forests.

The treatment of the land around Bombala was similar as it sustained a flourishing wool trade. Both the cattle and the sheep stocks that covered the land were destined for the export trade from the region. This trade was driven by prices in Sydney or foreign markets, not by any thought of ecologically sustainable development of the region. Profits from the export trade dictated land use, and unconstrained use led to overuse and resource exhaustion, especially as profits could be high.

At issue for the woodchip industry is the same set of economic preconditions that the cattle and the sheep industries pioneered. Profits from an export trade dictate the annual quantity sought. Even though logging is now restricted to a reduced area of forest, management is partly governed by a large profitable industry. Not unexpectedly, conserving fauna in the face of such gigantic pressures is difficult. There is little doubt that if woodchipping for an export trade had been feasible in the 19th century, there would be a treeless landscape in the Eden region today that would be reminiscent of the once-forested England (Rackham 1986, 1996). The conjunction of technological advances with historical and geographical influences shaped the fragmented forest landscape evident in the Eden region today. Given that it was early settlement that left the most indelible stamp on the landscape, it is to this period that we turn and interpret the sketchy records of explorers' journals, as well as the photos from the latter part of the 19th century, in conjunction with both the local and national historical records.

Early years: exploitation of private lands

The fresh, lively local history by Swinbourne and Winters (2001) encapsulates the vital elements of a society that moved quickly from early settlement in 1830 to a society well-integrated into mainstream colonial life, and on to the 20th century with dominant local industries of dairy farming and timber getting. Their pictorial approach allows a visual shorthand interpretation of changing technology, such as vehicles, the cultural connectedness with the world through clothes and building design, and depicts the rural aspiration to survive and raise families over the long term.

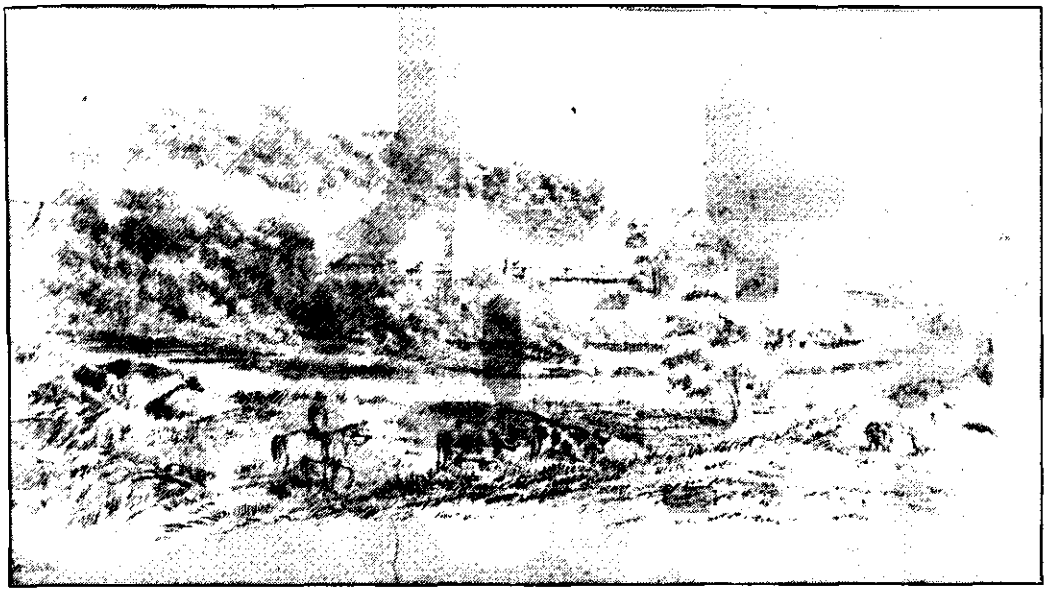

Figure 2. Candelo, NSW, 1842-52
Source: Sketches in Australia and the South Seas. Small picture file, Mitchell Library, Sydney.

Ryrie, 1840

Stewart Ryrie (Jnr) was a pioneer of the Monaro and spent eight weeks travelling east through the Eden region in 1840 (Ryrie 1840, Andrews 1998). An amateur surveyor, he made notes in his diary on the region's potential for agricultural exploits into new districts. On one journey, Ryrie travelled from Coolringdong, north-west of Nimmitabel, to Twofold Bay at Eden, passing through Bibbenluke, Cathcart, Candelo and Pambula. At Candelo he noted that:

> The Country round here ... is of the very best description for grazing either sheep or cattle ... It is moderately timbered with a rarity of useful timber, as, Gum, Box, Stringybark, oak.

This country was a complex of grassy ecosystems, covering much of the Bega Valley when Ryrie passed through. The extent to which these grassy ecosystems were created and maintained by Aboriginal burning is a subject of continuing debate (e.g. Benson and Redpath 1997). Large-scale clearing for agriculture has now reduced these floristic assemblages to tiny remnants; 86 per cent of the Bega Dry Grass Forest surrounding Candelo has been cleared (Keith and Bedward 1999) (Figures 2 and 3). The hills around Eden provide a stark contrast, with Ryrie describing the Coastal Dry Shrub Forest as 'barren, stringybark ranges'. Not surprisingly, only 2 per cent of this

floristic assemblage has been cleared (Keith and Bedward 1999). Similar vegetation extends north of the Eden region (Keith and Bedward 1999) and it is here, on another journey that Ryrie took to Windella, west of Mt Dromedary, that he states that 'this point is the termination of the good country to Northward'. The importance of assessing the agricultural potential of the country so dominated the records that not one mention of the fauna occurs in Ryrie's diary.

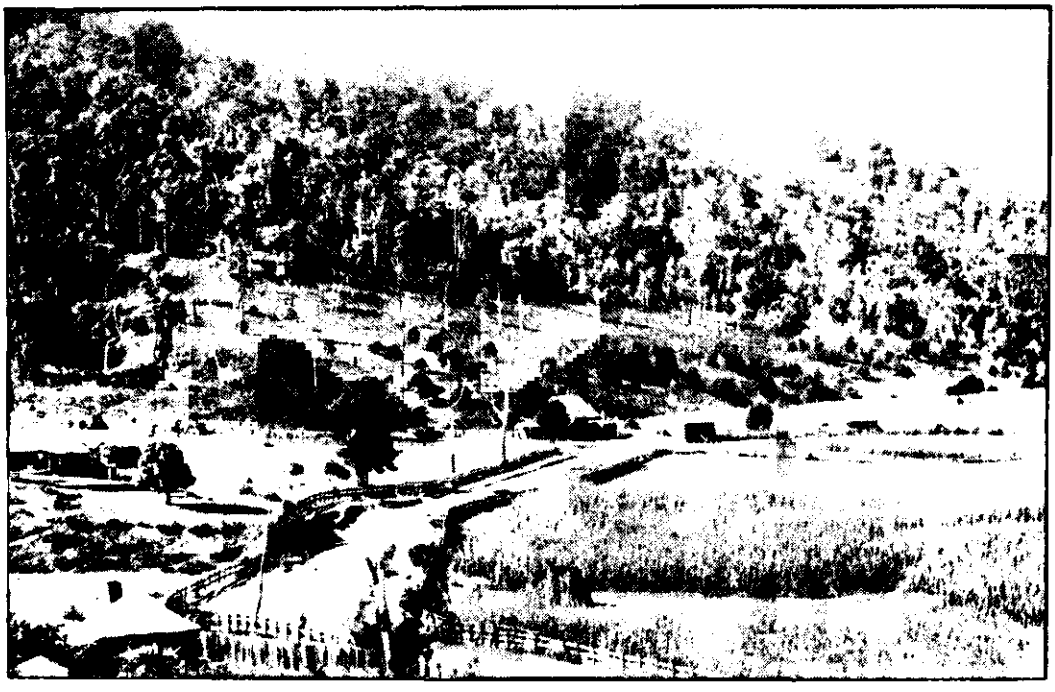

Figure 3. Towamba corn being cut and stacked for silage.
Source: Postcard about 1910s. Small picture file, Mitchell Library, Sydney.

Agriculture and pastoralism

The agricultural potential of the area had been realised by 1830, when the first cattle entered the 'newly-discovered pastures' (Bayley 1942). Change was rapid as the paper reported when the Bega Agricultural Society was formed in 1857: 'In looking back only some three or four years the mind is forcibly struck with the great difference in this place between now and then, (*Illawarra Mercury*, 7 September 1857 cited by Evans 1998).

There was a parallel and brisk development of the coastal towns and the higher country at the western fringe of the forested lands. Schofield (1990) states that by 1833 the scramble for possession of the grasslands had started and by 1836 all the readily available land on the southern Monaro was occupied, a situation that was legitimised, says Schofield, by the 1836 Act of

Council to introduce annual licences for depasturing stock on Crown Lands. Schofield identified Bombala as a town of the Monaro, yet she also recognised it as being linked to the coast, particularly to Eden. Garran (1886) painted a glorious portrait of the Eden region:

> Bega [is] one of the most prosperous districts of the coast ... The town is placed on a well-chosen site, and being the mart of the district, is a thriving centre. The seaport, Tathra, is ten miles off, but further south is a more reliable outlet at Eden. The principal industries of the district are maize-growing, cheesemaking and pig slaughtering ... Prior to 1885, the last year of what may be, without exaggeration, termed the 'great drought', Candelo was justly considered one of the most prosperous farming centres of the colony ... But when after years of prosperity drought came, its results were disastrous in the extreme ... It is necessary to rise about two thousand feet before the edge of the great pastoral country, Monaro, is reached ... In the front is the cozy town, Bombala, surrounded by grazing estates and farms, the soil of which is as good as any in the colony. Such country as this is admirably suited for farmers in all but one particular—its distance from extensive markets.

The introduction to Garran's (1886) *Picturesque Atlas* expresses an outlook that underpinned much of colonial commercial life:

> Blessed with an intelligent and energetic population, we have seized our rich possession and turned it to the best account. The business of the Picturesque Atlas has been to portray this wonderful growth and prosperity.

Such language helps explain the ethic of colonialism in the latter decades of the 19th century, and details the thriving agricultural/pastoral enterprises from Bega to Bombala at that time. The source of prosperity was derived from agricultural exports. The industries of cheese, maize and pigs depict intensive agriculture on rich soils near water. The only shadow that passed across the face of this eulogy was the great drought of the early 1880s. One can only imagine the impact that such a drought and starving stock had on the remaining native vegetation, the exposed soils and the newly-cleared river banks. The lack of mention of timber suggests it was not an export product of note by 1885.

Timber for tallow

The Cobargo-Bermagui area was first seen by European eyes when William Tarlinton brought cattle from Braidwood in 1829 and took up land in the area and along the coast (Hearn 1996). Combined with a depressed market

and a long drought from 1838-43, Tarlinton could not make a profit from his cattle. He started a camp at Bermagui among the banksias and the bangalay (*Eucalyptus botryoides*) and constructed a boiling down works to extract the fat from the slaughtered cattle. Hearn (1996) notes that the 'headland, once thickly timbered, provided wood to feed the fires under the vats'. He outlines the names and sizes of the squatters' runs who tried their luck from the 1830s. The cost of a licence to depasture stock related to the carrying capacity of the run, which 'in this timber-covered country, at best, meant one beast to about twenty acres'.

After the Robertson *Land Acts* of 1862, selectors settled into the area. Hearn states that 'stringybark trees fell to the axe - cut into slabs to build a house and sheds, sawn to surround doors and windows, used for post and rail or chock and log fences or just felled to clear the hills for pasture.' According to Hearn, crops of potatoes, peas, beans and maize were grown on the river flats, and most selections on the hills were turned into dairy farms, with the income derived from the sale of butter and from pigs reared on the skimmed milk. Selectors would strip wattlebark or cut timber for the tanneries or mills in Sydney. Swinbourne and Winters (2001) describe Bermagui in the same period, noting that it was proclaimed in 1872 and was a port for Cobargo's wattlebark, sleeper cutting and sawmilling and dairy industries.

From a forest historian's perspective, the outstanding feature of the period is the pushing back of the forest and understorey from the headlands at Bermagui, across the river flats and up onto the hills. The conversion began in 1832 with the arrival of the first cattle and, by 1872, there were thriving industries exporting either the product cut directly from the land (timber, wattlebark) or derived from it (butter). The timber was used or felled and wasted. In the histories there is little description of the habitats, other than confirmation that the area was once all forested, and there is no mention of native animals as food, pelt or pest.

By contrast, the history of Eden is steeped in the use of native marine mammals—whales. Davidson (1988) describes the whaling station that was first set up in Twofold Bay, Eden in 1828. The Imlay brothers conducted a whaling station from about 1832 until the recession of 1843-44. They also had extensive land holdings in the Bega/Pambula area. Davidson (1988) describes how the blubber was boiled down and how the resulting oil was stored in casks for shipping out. When whaling ceased in Eden just before 1930, it was, according to Davidson, the longest shore-based whaling station in Australia. Swinbourne and Winters (2001) record that Eden was

proclaimed in 1843 and that land sales began in the same year. By 1849 there were 250 settlers in the area.

The forest historian gains little from this account, except the fact that timber was used for the production of whale oil. The use of the adjacent forest for the boiling down works would not have been governed by the slightest restraint on timber getting, so the local Eden habitats would have been sharply modified from the earliest days of European settlement. Further, the prevailing ethic which allowed the use of native animals for profit would have been a mainstay of the settlement and in later decades would be applied to the terrestrial, fur-bearing mammals such as the rock-wallabies, kangaroos, koalas and possums and gliders (Lunney and Leary 1988, Lunney et al. 1997b).

Sawlogs, sleepers and wattlebark

The growth and long-term activity in forest product exports is a feature of the region from the late 19th century (Lunney and Moon 1988, Swinbourne and Winters 2001). It was slow to develop relative to the early growth in stock, especially sheep. Schofield (1990) notes that by the 1870s gold mining was generating a local need for timber. The growth of the railways in New South Wales and overseas in the late nineteenth century made sleeper cutting a prominent activity. Sawn timber for the building trade was first cut over pits, then by steam-powered sawmills and after World War II by diesel-powered mills. The steam sawmills were based on creeks and rivers because they needed water. Much of their logging would have been in the hilly country, since the flat, fertile and well-watered country had already been converted to intensive farmland. In modern terms, this was all old-growth forest logging. Regrowth was encouraged for wattlebark (*Acacia mearnsii*) for tanning from the mid-19th century. It remains a task for future historians to locate the placement of each sawmill, its duration and the tree species taken, and the location of the wattlebark trade.

Canberra was the first major market for milled timber from the southern Monaro and sales of sawn hardwood increased steadily from 1911. From 1949 the Snowy Mountains hydro-electric project also needed timber. Schofield notes that by 1952-1955 chain saws had replaced crosscut saws and tractors had replaced bullock teams.

Swinbourne and Winters (2001) present a photo of a timber mill at Tanja (just north-west of Tathra) at the turn of the century and another of a log truck (or jinker) with a log weighing 32 tons being taken from Tanja State Forest headed for Masterson's Bermagui mill. There is no date, but the model of the truck suggests possibly late 1940s, although the truck may have

been used well beyond that date. These dates suggest that logging of these coastal forests was a long operation and the images depict logging of huge trees, which are no longer a feature of these forests, except for their stumps (Lunney and Moon 1988). The pre-European complement of fauna they harboured can only be a matter of conjecture. The only photo of forest fauna in Swinbourne and Winters is of 'A bush monkey [koala] knocked out of a tree felled by Masterson's sawmill in Tanja, c.1980. It was released unhurt.' Exactly where the koala was found is a point of interest in a region which by then had only a small, scattered koala population, the tiny remnant of a population once sufficiently large to briefly support a koala skin export trade (Lunney and Leary 1988, Lunney et al. 1997a). The koala is symbolic not only of a fading faunal heritage, but of a species dependent on the trees that grow on the richer soils—the very soils selected by the first farmers.

Of relevance here is the expansion of softwood plantations of *Pinus radiata* from 1927. The area planted increased substantially after 1967 once the quality of the timber was recognised. Schofield notes that the Forestry Commission of NSW bought a privately owned plantation, Kapunda, which raised its total area of *P. radiata* to 29 000 hectares. She did not mention how many of those hectares were planted on former pasture and how many were native forest clearfelled for the purpose. This is germane to the matter of conserving native fauna.

Schofield (1990) comments that over the past two decades increasing public awareness of the use of natural resources has led to the formation of conservation groups, which have influenced government policy to change the management of the forests. The issues at times, Schofield says, have become highly emotional and dangerous methods have been used by demonstrators to prevent logging. Swinbourne and Winters (2001) present it a little differently. They state that on 14 November 1967 the State Government announced that Harris-Daishowa (Australia) Pty Ltd was the successful applicant to export woodchips to Japan. They add that this move led to an ongoing and often bitter and heated debate on the future of the timber reserves, with pressure to conserve old-growth forests. Swinbourne and Winters note that after many years, 'the forest debate has motivated improvements in logging practices by the Forestry Commission and the creation of large areas of National Parks'. One might remark that whatever industry was visibly altering the land in the late 20th century was certain to generate controversy. It happened to be forestry, yet as a local industry it has a cultural heritage as long as the agricultural pursuits of cattle and sheep. The pre-conditions for controversy were certainly present.

Public lands debate 1968-2002

Detailed maps of this period depict the ebb and flow of the woodchip battle and the struggle to gain a representative system of national parks and nature reserves as well as the growing dominance of map-based decision making. The maps from the late 1990s onwards are readily available on the computer database available at the State's National Parks and Wildlife Service. However, the earlier maps are hard to find and had to be digitised especially for this study. The Forestry Commission's 1968 *Bega Project Map* predates its Eden Project Map series. This map series offers excellent information about tenure, but little about topography, land use or forest cover. The Map of the County of Auckland Fourth Edition 1966 was produced by the Department of Lands in the traditional style with ranges drawn like caterpillars. Its tenure boundaries occupied centre stage in the land carve-up at the dawn of the woodchip era are also shown on the 1968 *Bega Project Map* (Figure 4).

1968: vacant Crown land options

The stunning feature of the 1968 map is the large area of vacant Crown land (295 000 hectares), the modest area of state forest (150 000 hectares) and the even more modest area of park and reserve (10 000 hectares) in a region of about 800 000 hectares. The debate over the future of much of this land was not a public one; the public debate was focused on the coastal strip, with the local council hostile to the land grab for coastal parks.

There was serious scientific interest in the large area of vacant Crown land and in a series of polite but firm submissions dated from December 1967 to October 1968 from three leading ecologists/geographers of the time (H.J. Frith, J.G. Mosley and A.B. Costin), a major new park and reserve system was proposed (Figure 5). Their submission stated:

> The Committee realises that a report on natural areas suitable for dedication as parks and reserves in the County of Auckland is particularly urgent since decisions will soon be made about the allocation of lands for productive forestry which will greatly change the future land use pattern of the County. ... The South Coast contains much greater possibilities for the preservation of large natural areas than the North and Central Coasts and ... will have to make good deficiencies elsewhere ... The Committee feels that in the main any national parks created should be large ... large parks are less likely to be affected by outside influences, and therefore more likely to be effective as areas for science and natural recreation (NPWS file M1413)

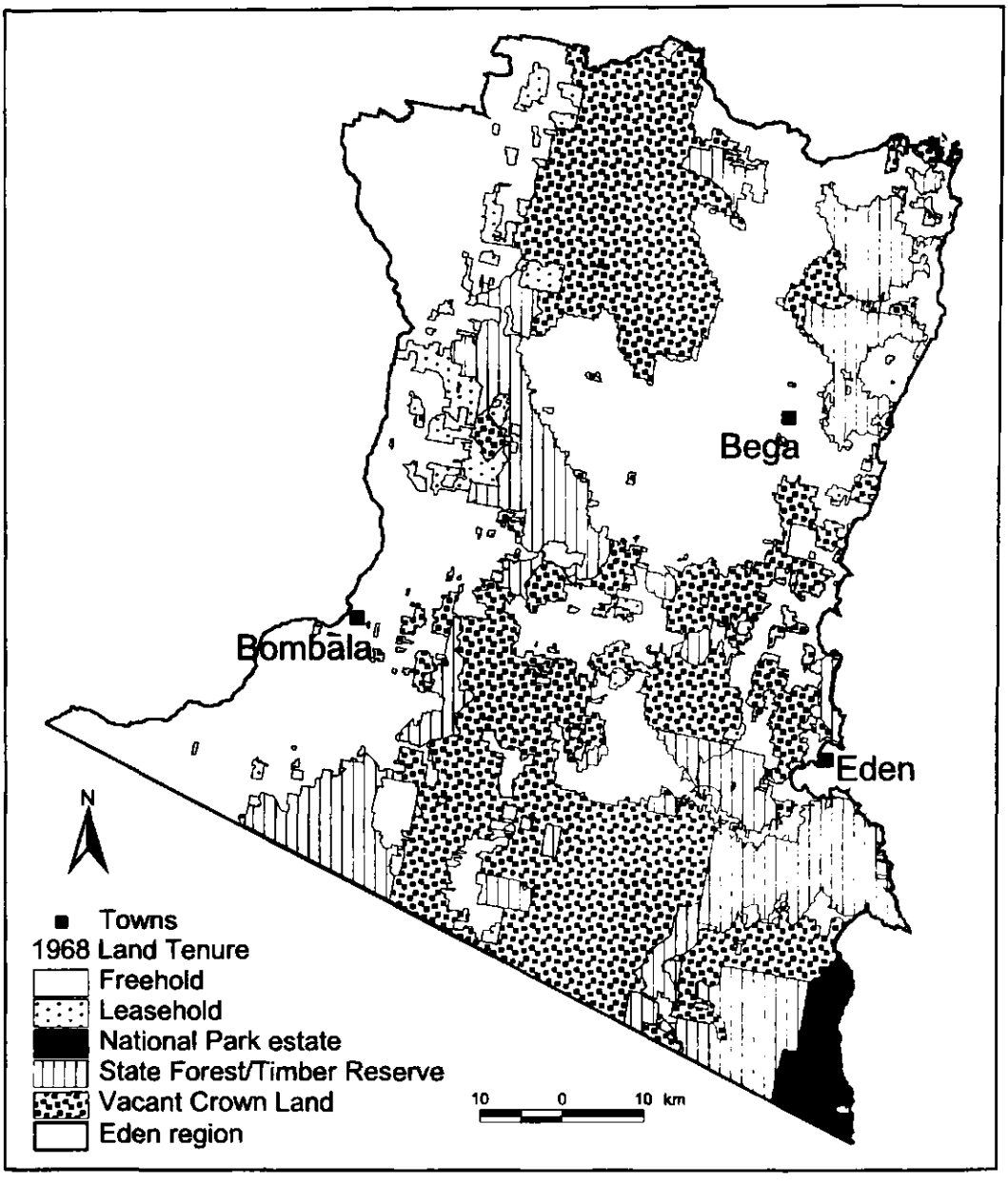

Figure 4. Land tenure of the Eden region, 1968.
Source: Digitised from the Forestry Commission's *Bega Project Map—First Edition* and *Batemans Bay Project Map—First Edition*, both published 1968.

The establishment of Nadgee Nature Reserve in 1957 had been the only other instance of reserved land in the region for conserving fauna—an extraordinary example of the local application of new ideas for fauna conservation (Lunney 1998).

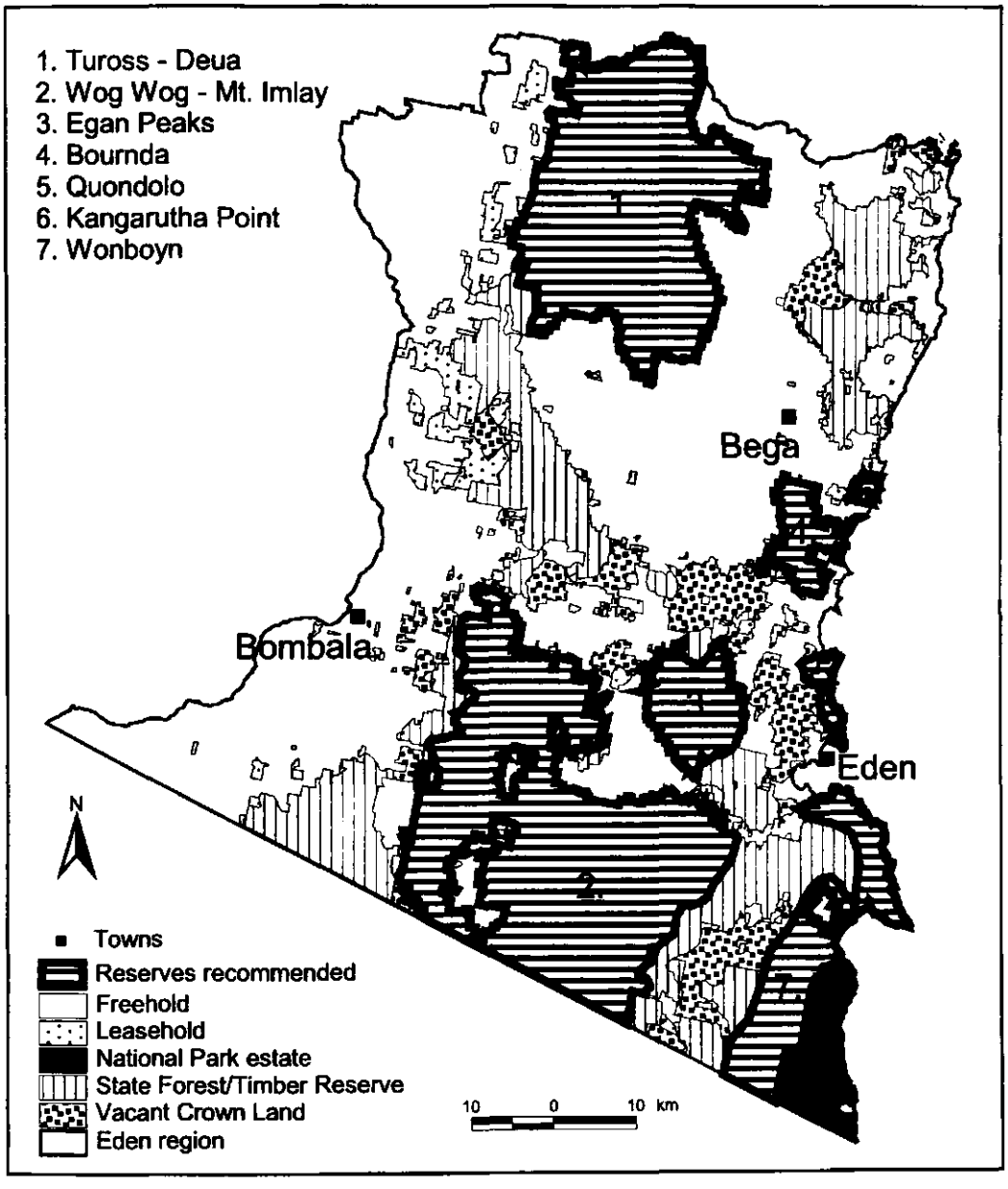

Figure 5. Park and reserve proposals in the Eden region from 1967-68.
Source: Boundaries of proposals are approximate, taken from a map of *South Coast Proposals* (Scientific Committee on Parks and Reserves 1969) and from maps accompanying submissions in NPWS File M1413.

The set of proposals by Frith, Mosley and Costin was also part of the recommendations of the Scientific Committee on Parks and Reserves (1969), whose position was to recommend an adequate system of Parks and Reserves for New South Wales, with the coastal area as its first priority. A

major principle behind the proposals put forward was that, 'One large reserve is in general much more efficient than a number of small ones'.

An early concern of those involved in the conservation of forested lands was that large areas were being carved up by the development of a road network. In a letter dated 4 July 1969 to Director NPWS, J.G. Mosley (Australian Conservation Foundation) wrote:

> On the maps [enclosed] I have marked areas which are more than 3 miles from a road ... you'll probably agree that any large roadless, mountainous area is a wilderness resource of some consequence. All the roadless zones ... are areas which have been suggested for addition to the national parks system ... But for road building activity during the last two or three years the roadless areas would have been much more extensive. Is there anything that can be done to protect these last wilderness areas from being eliminated by further road construction? (NPWS file M1413).

The Forestry Commission was also keen to acquire these lands. This is apparent from ministerial correspondence at the time. In a letter to the Minister for Lands in July 1968 the Minister for Conservation wrote:

> In view of the importance of early State Forest dedication of these lands [in the County of Auckland], and to avoid what could otherwise be protracted negotiation, I suggest that the question of such dedication should be referred for consideration and recommendation by a committee of senior representatives...

The position of the Forestry Commission here is interesting but not well recorded. On 7 February 2002, one of us (DL) was able to interview Dave Holmes, former Deputy Director at National Parks and Wildlife Service in the early 1970s. His formative professional years had been with the Commission, including a good stint in the Eden region. He gave an important insight into the Commission's position of the time. According to him, the forests of the Eden region were of low value when he was there as a young forester in the 1950s. Value here means 'stumpage'. This is the revenue obtained by the state after the estimated costs of logging, transport to the mill, milling, and transport by ship to the point of sale, such as Sydney, and profit margin was subtracted from the estimated sale price of the product. It was the last cost—transport from the region—that made the stumpage so low at Eden. Further, a century or so of picking over the forests, especially the coastal forests which were near the export wharves at Eden, Tathra and Bermagui, had deprived them of their large, straight trees, leaving forests dominated by trees that were damaged by fire, termites, storms and

past logging. Most of the trees had, as Holmes emphasised, scars, defects and shapes which made then unsuitable for producing sawn timber.

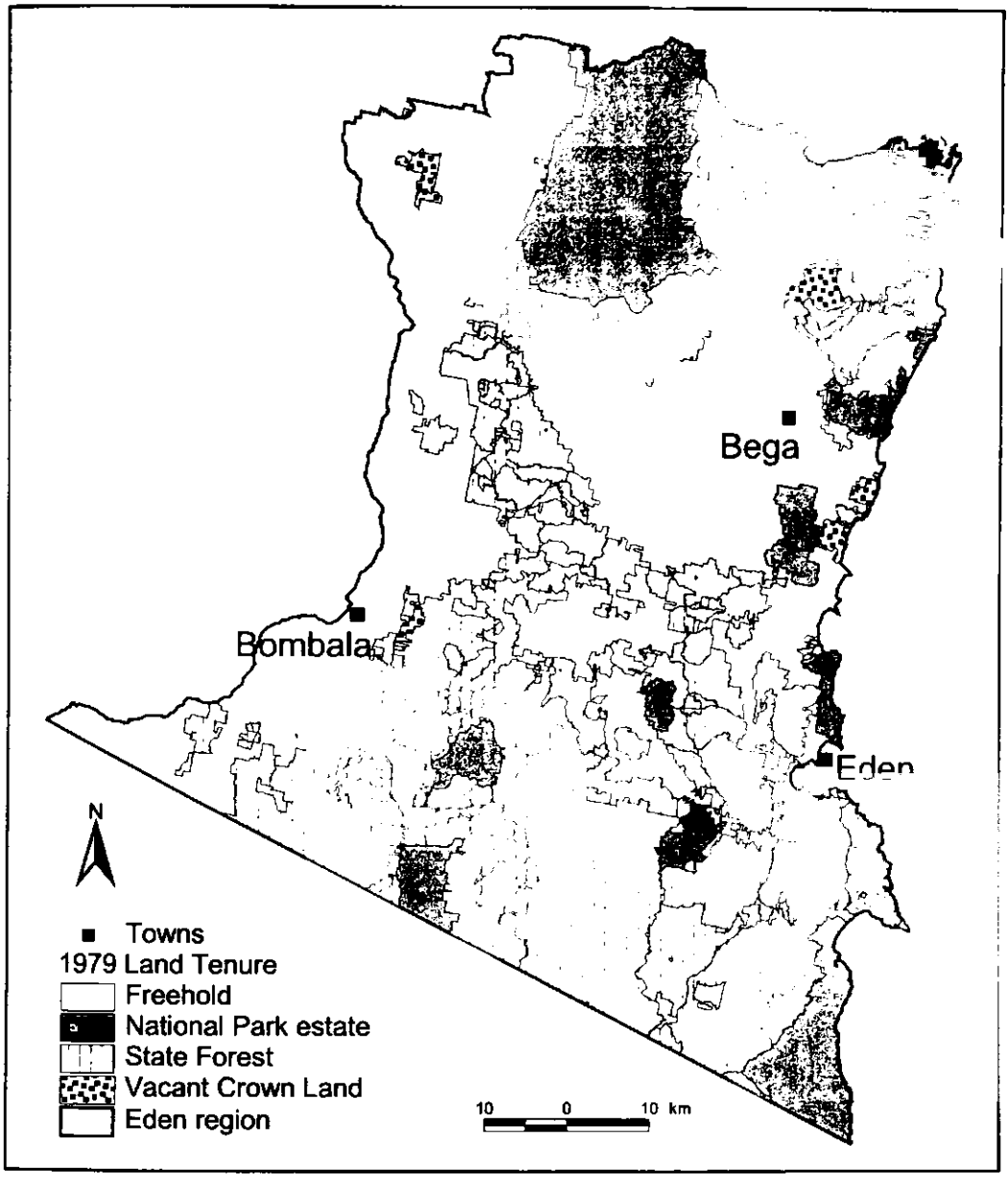

Figure 6. Land tenure of the Eden region, 1979.

Woodchipping offered the opportunity to log this defective timber, retain some useful advanced growth and, notably, create conditions favourable for regenerating the forests rapidly. These would be, in Holmes' terms, 'new forests for old'. The logs for woodchipping would go to a local mill at Eden

to be processed for export to Japan where they would be used to make paper.

However, the woodchip operation envisioned by the Commission was for a limited, staged and more tightly-managed enterprise than the one that eventuated. The initial Commission objective was to commence on a limited scale and evaluate the logging in the light of the needs of sustainability of the forests and related forest management practices. However, the State Government entered into contracts with the Japanese buyers which overrode bureaucratic caution. The contract committed the forests to produce a set volume of timber, even though road access was very limited and an assessment of the resource and its regrowth capacity had not been completed. The forests with road access had to be heavily logged at first to fulfil the contract. Holmes noted that in these early stages, few large trees were left standing after logging. A wildfire in the early 1970s in a newly logged forest thus presented a moonscape photo opportunity for conservationists, some of whom were considered to have misrepresented what was occurring. He added that these very forests are now sporting valuable high quality regrowth. This account is consistent with the recollections of forestry practices just south of the state border in East Gippsland (Douglas 1999) and expands the brief statement by Baur (1972) under the heading 'Silvertop Ash Types':

> ...these stands in N.S.W. have been mainly used as a source of sawlogs, but the type is now being developed as the basis of a woodchip export trade with Japan, using logs that otherwise would have little value for milling purposes. This export trade ... will do much to improve the management and protection of the currently oft burnt and rather derelict Silvertop Ash forests lying to the south and west of Twofold Bay.

The final decision about the division of vacant Crown Land in the late 1960s is identified in Figure 6. It shows that the forestry claims were given the highest priority by the government. In an Environmental Impact Statement prepared in 1975 (Harris-Daishowa 1975), the Australian Museum (principally H. Recher) presented a table of the division of the land (Table 1). The museum's comments at the time were:

> The parks established in NSW from vacant crown land at the time the chip operation was initiated are small and occupy mostly rough terrain unsuited to forestry. Their wildlife value is not known, but the small size of the parks will create problems of management.

Table 1. Proposals for national parks and nature reserves compared with the areas actually reserved, Eden District, NSW

Park or Reserve	Proposed (hectares)	Reserved (hectares)
Nadgee Nature Reserve	n.d.	14 774
Bellbird Creek Nature Reserve	n.d.	53
Egan Peak Nature Reserve	12 000	2 145
Mt. Imlay National Park*		3 763
Nalbaugh National Park*	89 068	3 763
Nungatta National Park*		6 100
Ben Boyd National Park^	37 000	9 000

Notes: * These three parks were included in a single proposal, 'Mt. Wog Wog–Mt. Imlay'. ^ Proposal named 'Quondolo'.

Source: Harris-Daishowa 1975: 152.

The ground-breaking wilderness report, known as the Helman Report (Helman et al. 1976) identified the area now known as Deua (then known as Wadbillga) as fulfilling the requirements for wilderness. Nadgee Nature Reserve only partly fulfilled the criteria because it was too small. No other areas were identified. However, when Peter Helman commented to one of us (DL) in 1982 that when the Imlay Road was opened in 1976 the largest wilderness area in New South Wales was lost and thus just missed being identified in his later Helman report. The Imlay Road is a large road that links the Cann River Highway and Bombala in the west to the Princes Highway in the east, south of Eden and near the road to the chipmill. This forest was the previous vacant Crown Land shown in Figure 4.

1970-2002: woodchips, the prevailing norm

Except for the conversion in 1978 of the catchments of Middle and Nelson Lagoons in Tanja State Forest to what is now part of Mimosa Rocks National Park, the boundaries between state forest and national park or nature reserve remained almost unchanged from the beginning of the woodchip industry until the late 1990s. In 1996 the first major rededication of state forest to national park took place as part of the Interim Forestry Assessment. Further rededications were made in 1999 following the Comprehensive Regional Assessment and Regional Forest Agreement. The map as of February 2002 shows a major shift in tenure and thus of land use (Figure 7). A total of 126 870 hectares has moved across from state forest to national park between 1979 and 2002.

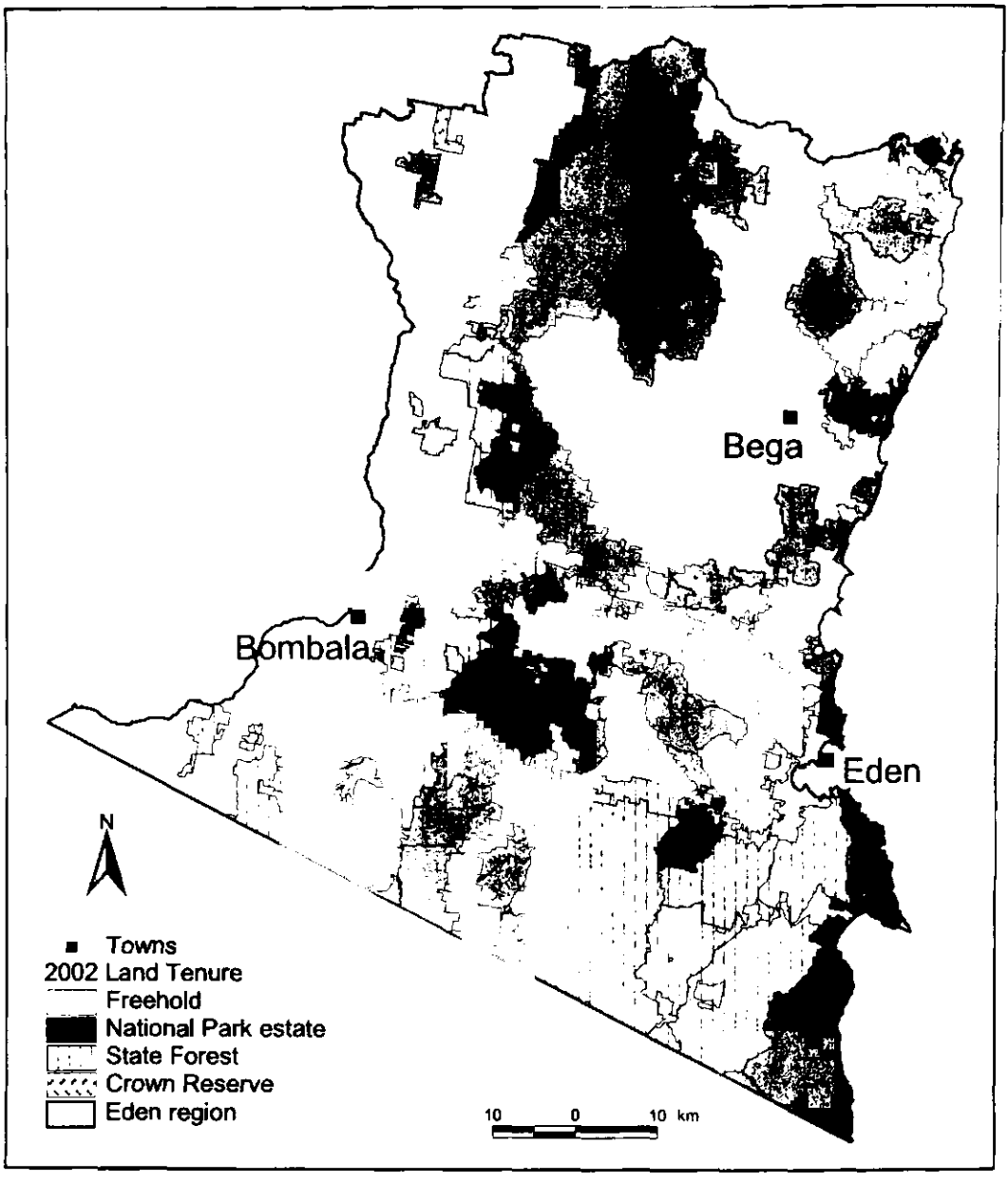

Figure 7. Land tenure of the Eden region, 2002.

The area involved (Table 2) shows a major re-alignment of the local forest use, with conservation becoming a primary goal. Declared wilderness in the Eden region now totals 80 681 hectares (NSW Government 1999). However, land of other tenures, especially private land, will become a conservation issue when the dedication of national parks or nature reserves is not a likely option. If conservation is to be effective, community participation, council planning, and wildlife management strategies will need to be

explored in ways not previously considered, but nonetheless foreshadowed in the New South Wales Biodiversity Strategy (NPWS 1999).

Table 2: Area of each tenure over time in the Eden region (hectares).

	1968	1979	2002
State forest	152 159	328 115	204 977
National park	12 732	113 056	247 627
Vacant Crown land	296 005	10 392	0

Source: Derived from digital maps which may contain small errors in boundaries.

Discussion

The cultural insights provided by an ecological history that interprets the origins of current forest conflicts and fauna conservation complement insights derived from new technological advances. In this paper we juxtapose GIS maps with 1840 diary entries and photos taken in the first decades after the invention of photography. There is a continuing palpable bias towards commercial progress in both past and present discussions of the future of the region's forests. Their conservation became a matter of local interest in 1957 with the farsighted dedication of Nadgee Nature Reserve, but it did not reach an audible pitch until there was a pronounced interest in the creation of new national parks in the late 1960s. That it remains a live issue is evidenced by the continuing debate in the local papers.

Our examination of the historical records of the Eden region reveals that the land was forested at the time of initial European settlement in 1830. The land taken up for stock, particularly cattle on the coast and sheep on the high country, was originally principally open grassy forest, whereas the still-forested lands were seen in the 1840s as barren stringybark forests. The river flats were seen as valuable for crops, and the riparian forest was rapidly cleared for maize, pigs and dairy cattle. Timber was used in the earliest decades for agricultural pursuits, such as boiling down cattle at the mouth of the Bermagui river in 1838. By the end of the 19th century, timber was extracted from the forested lands for building and sleepers. The woodchip industry, which began in the late 1960s, ushered in a new era of forest change.

The early historical record is bereft of fauna records, except for the amazing history of whaling in Twofold Bay in Eden from 1828. Fauna is mentioned only incidentally in the 19th and early 20th century. Interpreting the impact of change on the fauna in the forested lands of the Eden region

will require a conceptual approach using landscape ecology that draws on all possible historical records. Detailed recent records of individual species will also be required. A start has been made with a regional, scat-based survey of macropods (Lunney 1989), community survey of koalas (*Phascolarctos cinereus*, Lunney et al. 1997a) and a survey of spotted-tailed quolls (*Dasyurus maculatus*, Lunney and Matthews 2001). The recently-developed computer-based Atlas of NSW Wildlife, managed by the National Parks and Wildlife Service will also be of increasing assistance.

Three features stand out in the sequence of habitat changes since first European settlement in 1830 in the region: firstly, the loss of the grassy forest habitat to the export dairy and wool industries was so rapid and extensive that extinction of some native animal species and perpetual rarity of others was inevitable; secondly, the extant forests over which much of the current woodchip debate exists were until relatively recently (1968) mainly vacant Crown land; and thirdly, the primary cause of faunal loss was the wholesale change in the 19th century to the landscape for agriculture. The faunal records of the region were almost non-existent from the 19th century and did not start becoming available until recent decades (1970-2002). Their primary uses will be to interpret the long-term changes, to conserve the remaining fauna in the drier forests, and to offer options for species recovery and landscape restoration. The next task for the forest historian with an ecological eye on the fauna is to find further old records, interpret change on a landscape scale and to link species lists with ecological knowledge to assist in managing the regrowth and guiding restoration strategies.

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20

Forest communities: real or imagined?

Peter Davies

Introduction

The timber industry in Victoria was dominated by small forest sawmills from the mid-nineteenth century until the Second World War. Mills were generally connected by tramline or bullock track to the nearest railway or jetty. The physical isolation of forest mills meant that many workers lived permanently on site. Some brought their wives and children with them, creating small settlements deep in the bush. Mill populations varied from twenty or thirty people up to several hundred. Forest camps featured tiny wooden huts shared by unmarried men, a boarding house, and timber cottages for workers with families. The longevity of forest mills varied considerably, but the average in the major forest areas of Victoria was around four years (see Brinkman and Farrell 1990: 175-9).

To what extent, then, were these mill settlements 'forest communities'? In this context, what does 'community' refer to? Did workers and residents feel a sense of belonging, attachment, and identity with the mill and each other, or was it just a place to work for a while before moving on? For how long did people stay? Which aspects of life at a forest sawmill united them and which divided them?

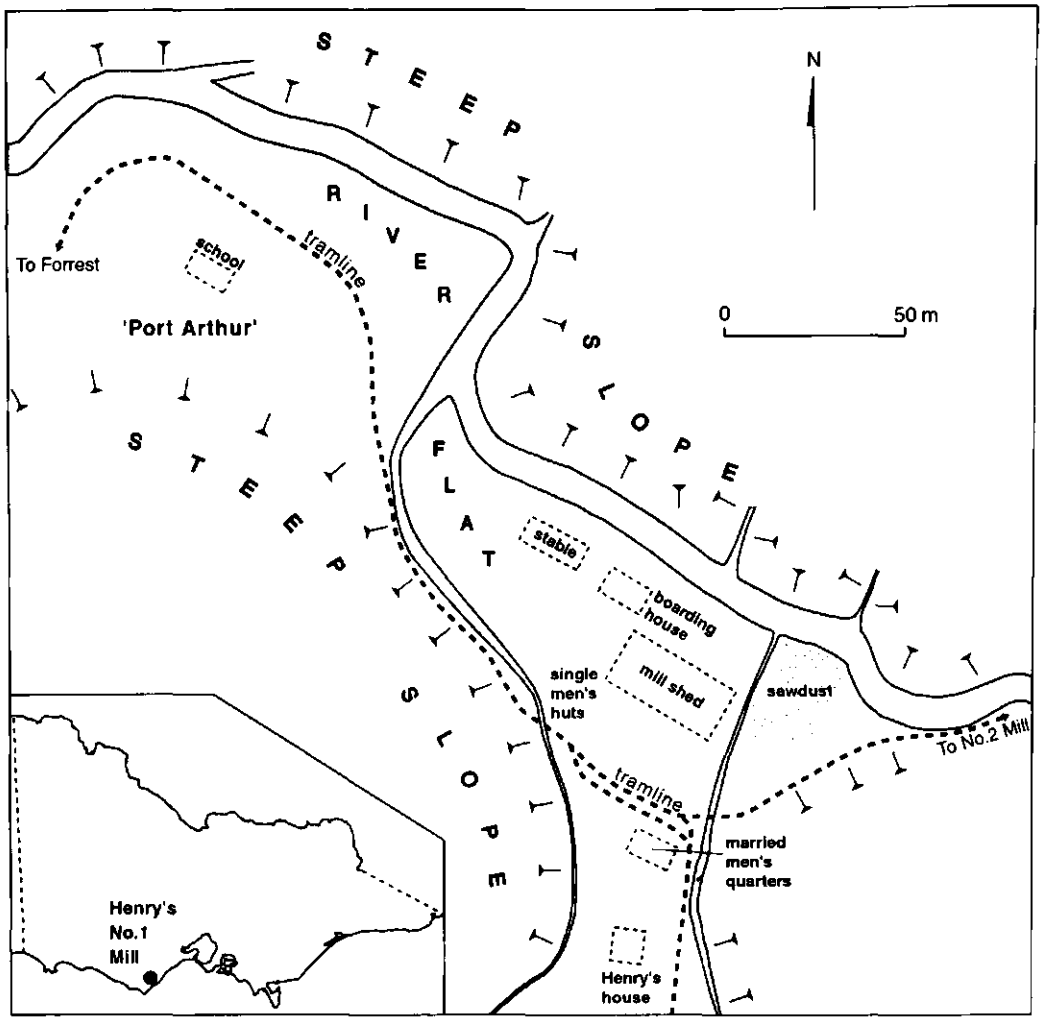

Figure 1: Site plan of Henry's No. 1 Mill

This paper uses the example of Henry's No.1 Mill to explore the notion of forest community. The site lies in the Otways State Forest of south-west Victoria (Figure 1). The mill was established in 1904 and operated by W. R. Henry & Son until its partial destruction by fire in 1927 and subsequent abandonment. It was connected by timber tramway to a rail terminus at Forrest, ten kilometres to the north. Workers and their families formed a population of around 100 people. Along with huts and houses, it featured a boarding house, billiard room, store, post office and school (Davies 1999; 2001a; 2001b; Houghton 1975: 51-74; 1995). In considering issues of community at Henry's Mill, reference is made to such factors as residence and personal mobility, politics, industrial relations and sectarianism, as well as other ways in which the notion of community was expressed at the site. Although Henry's Mill cannot stand for all Victorian mill settlements, it was nevertheless typical in many respects of the industry for this period.

Community

The notion of 'community' has been intensively debated in anthropology and sociology since the nineteenth century. Ferdinand Tönnies distinguished between community (*gemeinschaft*), which fulfilled the need for private, emotional relationships between people, and society (*gesellschaft*), characterised by colder, more impersonal connections to the marketplace (Tönnies 1963 [1887]: 33-102). Meanings of the term subsequently proliferated, with George Hillery identifying little common ground among the many definitions he catalogued (Hillery 1955). Human ecologists stressed space, habitat or settlement in their use of the term, while others focused on collective psychological needs (Poplin 1972: 65-107). Formulations of community have also highlighted the importance of social interaction. Norbert Elias, for example, reinforces the residential aspects linking people to space, defining community as 'a group of households situated in the same locality and linked to each other by functional interdependencies' (Elias 1974: xix). Arensberg incorporates a temporal dimension as well, regarding the community as a 'structured social field of...relationships unfolding through time' (Arensberg 1961: 250). Cohen treats community as a shared system of values, norms and moral codes which provide a sense of identity and boundedness to its members (Cohen 1985: 12).

'Community' in the present discussion refers broadly to a group of people interacting daily in a specific place. Family, friendship and long-term residence play an important role in developing a sense of belonging among community members. Kinship, residential proximity and a common workplace facilitate regular personal interaction, as do social institutions such as church and school. The 'settlement' provides the physical spaces and built structures within which people interact and community is formed. The spatial organisation of a settlement reflects and structures the kinds of interaction possible between individuals.

The community also shares a common subsistence and economic base, and participation in related exchange networks. It involves an identification with place and a sense of belonging, a psychological dimension which can extend to shared cultural values and world view. The community can also be characterised, however, by conflict, rivalry and hostility, as much as by cohesion and common purpose (Mayne and Lawrence 1998: 96). In examining the notion of community at Henry's Mill, I will briefly trace the ways in which a sense of belonging and attachment was expressed at the mill, and the cross-cutting loyalties and contested values which divided individuals and groups.

Residence

The longevity of Henry's Mill (about 24 years) provides an opportunity to trace patterns of residence which are less accessible at sawmills of shorter duration (Figure 2). Data from Electoral Rolls, for example, provide a yearly register of voters, and a profile of people at the mill in terms of occupation, residence, sex and marital status (Davies 2001b: 139-141). This can be used to trace how long people stayed at the mill, and to identify differences between single men and workers with families. As voting was not compulsory until 1924, however, and limited to those twenty-one years of age or more, younger people and those disinclined to vote do not appear in such records.

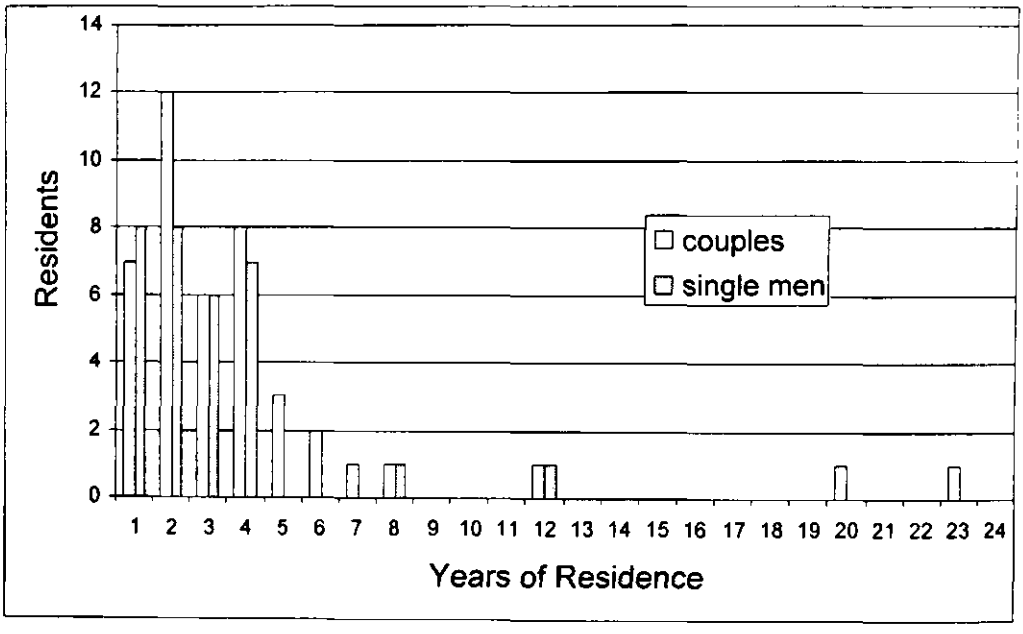

Figure 2: Residential longevity for married and single workers at Henry's No. 1 mill.

Employers of this period wanted a disciplined, sober and efficient workforce to support a newly industrializing society (Lake 1986: 130; McCalman 1984: 20; Shackel 1993: 130-5). Sawmill owners often preferred to employ married workers with families, even though it meant providing more facilities, because they believed such workers were more stable and committed to their employment, and more reluctant to leave in search of better employment opportunities. At the Mount Samaria mill (1921-1923) in north-east Victoria, for example, the proprietor not only built houses and a school for the families but installed a piped sewerage system and a telephone line to ensure the safety and comfort of the 'village' (Evans 1997: 77). The

Wye River mill (1920-1921) on Victoria's west coast was fitted out with a store, school, boarding house and bakery to attract family men to the isolated location (Scales 1983). Over-capitalisation of both these operations, however, quickly lead to their demise. It was a delicate balance for proprietors to provide sufficient facilities for workers at a cost which did not jeopardise profitability.

W. R. Henry & Son also invested time and resources to provide housing for workers' families and a school for their children. The available evidence suggests, however, that on the whole families tended to stay at the No.1 Mill no longer than single men. In spite of the Henrys' efforts to provide amenities, it appears to have made little difference over the longer term. Ern Henry reported that employees and their furniture were always coming and going on the firm's timber tramline (*Timber Worker* 31 Aug. 1925). In addition, both single men and families tended to remain at the mill for no more than about three or four years. Some stayed for much less time, a few considerably longer. Those who stayed longer generally worked in more senior, better paid positions, including foremen, millwrights and engine drivers. The decision to remain at the mill or to move on would have been made with reference to many factors, including skills and experience, aspirations for self and family, satisfaction or otherwise with wages and living conditions, job opportunities elsewhere and personal ties and relationships with other people at the site. Friendships formed in the rugged conditions of life and work at the mill were continually disrupted by the departure of individuals and households in pursuit of better opportunities elsewhere. Even three or four years at the mill, however, would have been long enough for most people to have called it 'home' and felt some sense of belonging within the mill community.

The spatial separation of single men's huts from family cottages was another feature of forest sawmills which both created and reinforced social distinctions. Accommodation for the mill owner and married men and their families was typically divided by a path, tramline or creek from that of unmarried employees. This pattern was evident at many sawmills of the period and provides some insight into the demography of mill communities. Families at Henry's Mill lived in a neighbourhood known as 'Port Arthur', several hundred metres from the mill shed (Figure 1). The tiny huts of single men, however, clustered in the path of a shallow gully at the foot of a steep spur. This physical separation of residential structures was a social phenomenon which was not necessarily enforced, but widely understood as an appropriate arrangement of living space, predicated on marital, social and occupational bases.

Politics

A polling booth operated at Henry's Mill during state and federal elections. Voting results for three Victorian state elections, in 1920, 1921 and 1924, were recorded in local newspapers (Table 1). These results provide some insight into voting patterns at the mill and the different political allegiances of its residents. In a settlement of around sixty eligible voters, only about half of these cast a vote, suggesting a relatively weak level of political engagement. This may have been due in part, however, to the difficulty of fulfilling the residential requirements to qualify to vote. A small fee was demanded of non-ratepayers wanting to enrol, and the time and effort involved in registration deterred many in an industry of high worker mobility (Bongiorno 1996: 82).

Table 1: Voting results for Henry's Mill, Division of Corangamite, in Victorian state elections of 1920, 1921 and 1924.

	Labor		Nationalist		Farmers' Union	
1920	J. Linahan	25	J. M'Donald	7	J. Black	3
1921	J. Linahan	13	J. M'Donald	10		
1924	W. H. Nicol	15	J. M'Donald	8		

Source: *Colac Herald* 25 October 1920, 31 August 1921, 27 June 1924.

The Labor Party in this period supported the regulation of working conditions, old-age pensions and the White Australia Policy. Support for the Labor candidate among workers at the No.1 Mill, however, was modest. The sitting Nationalist Party member, James M'Donald, gained between 20 and 43 per cent of the vote, indicating a significant disaffection with Labor policies and a willingness to return M'Donald in 1924 for his fifth term. He campaigned vaguely, but successfully, on a platform of measures which were 'for the good of the community'. Votes cast for the Farmers' Union candidate may have derived from seasonal mill workers who identified more strongly with the struggles of farmers and selectors than with Labor politics. Workers at Henry's, although united by their relationship of labour to capital, expressed their political differences through the secrecy of the ballot box. It remains unclear, however, the extent to which such differences were manifested in daily, face to face interactions at the mill.

Industrial relations

Industrial relations were another source of potential conflict among workers at Henry's. Membership of the Timber Workers' Union, for example, was far from universal, with only a dozen or two of the sixty workers

consistently maintaining their membership. It is likely that many were committed to the union and paid their dues promptly, while others needed reminding and prodding, and some avoided it altogether. Three months passed quickly, and it was easy to forget or delay paying the five shilling fee when union officials were so rarely seen. In spite of this, the mill was still regarded as 'white' by the union, as one where award conditions applied (e.g. *Timber Worker* 13 June 1916).

Terms of employment also varied. While labour in the mills was paid for in time wages, fallers in the bush were usually paid piece rates. Most of the bullock teams hauling logs, and the horse teams taking timber to market, were owned by individuals operating as contractors to the sawmills. These were often local selectors supplementing their farm income with work at the mills (Dargavel 1995: 37). Paling and shingle splitters frequently contracted their loads to the sawmillers in whose patch of forest they worked. Only the more valuable employees were typically given the security of permanent employment. Engine driving and sawing, for example, were highly skilled tasks, and reliable men with these talents were hard to come by (McCarthy 1993: 38). Lack of employment security for many workers may have undermined the sense of attachment they felt to the mill and its community.

The Commonwealth Arbitration Commission recognised more than 150 separate job designations in the timber industry during this period (e.g *Timber Worker* 6 May 1914, 6 Aug. 1915; 23 Nov. 1915). Industry awards carefully distinguished, for example, between engine drivers and winch operators, tallymen and ordermen, timber stackers and log yardmen, and between No.1, No.2 and No.3 benchmen. It is unclear, however, the extent to which these distinctions were rigidly maintained in practice. When the industry was healthy and men were needed to work the mills, their ability to specify working conditions in relation to industry awards was enhanced. When demand was slack, however, a willingness to perform any task to hand may often have been the difference between keeping a job and losing it. In spite of the numerous job descriptions and their accompanying pay distinctions, and the different bases on which men were employed, they were nevertheless united by being *workers*. Differences between individuals in terms of union membership, employment basis, wage levels and job descriptions may not have been regarded as significant in terms of belonging and worker camaraderie. Nevertheless, they remained a means by which the individual might define and distinguish himself from some, and identify with others.

Sectarianism

In 1914 eight-year-old Gladys Butcher was marched out on to the floor of the schoolroom by the teacher, Bernard Flood, for insolence and disobedience. She then kicked him in the knee, and was promptly suspended. This incident was the catalyst for a long-running dispute at Henry's Mill, involving three successive school teachers, the girl's parents, Amelia and William Butcher, W. R. Henry, the District Inspector, officials from the Education Department and others. Surviving correspondence reveals that, at its core, the dispute revolved around the social isolation the Butcher family felt as a result of their Protestant religious faith and their refusal to engage in drinking, gambling and smoking. Amelia Butcher was convinced that her children were targeted by the school teacher for punishment. She claimed to overhear a teacher threatening 'to tickle the rotton [*sic*] wowsers up meaning the protestants' (VPRS 640/2423/3601, 7 Dec. 1916). She believed that

> The people here have never liked us since we came...They all more or less drink some of the women and all but one or two men my Husband being a strict abstainer...nor does he gamble. We do not mix with them (VPRS 640/2423/3601, 10 Dec. 1915).

Her anger reveals the social distance and ostracism which could divide individuals and households within the close social confines of a forest settlement. In spite of a mutual dislike emerging between members of the Butcher family and the rest of the mill community, they appear to have endured their conflicts and remained at the mill for several more years.

The dispute thus opens a small, local window on the bitter sectarian conflict which divided Australian society for so many years. Amelia Butcher's attacks on the quality of the teaching and her accusations of prejudice against her Protestant family also hint at the social and political aspects of the sectarian divide. By the early twentieth century, many Protestants felt their values and world view to be at risk from a large and assertive Catholic minority. The historical working-class status and Irish origins of Catholics in Australia channelled them towards Labor politics. The broadly middle-class sympathies of Protestants, however, who supported individual enterprise and opposed socialism, meant they tended to support non-Labor parties. The growth of Catholic churches and schools was also viewed with distrust by Australian Protestants (Broome 1980: 110-111; O'Farrell 1977: 277-81).

Amelia Butcher's protests thus reveal the broader fears of Protestant sectarianism in this period. She clearly felt that her family was isolated among a community of drinking, gambling, Labor-leaning Catholics. She appears to have received little sympathy, however, from her husband's

employer and landlord. W. R. Henry not only opened his schoolroom to ministers of various denominations, but engaged workers with clear union and working-class allegiance. Although Anglican himself, Henry apparently had little in common with those employers who appended to their job advertisements 'No Catholics need apply' (Turner 1992: 55). The ministers of religion who were welcomed at the No.1 Mill on a regular basis included Catholic, Baptist and Protestant adherents. Nevertheless, given the bitterness of sectarian disputes in this period, it is unlikely that Catholics attended Protestant services, and vice versa. Attendance at a religious service in the schoolroom on a Sunday morning may have served as a very public and visible expression of an individual's or family's denominational allegiance.

Belonging

In spite of these sources of social difference and their potential to generate discord, the notion of communal belonging still found expression at the No.1 Mill. Various picnics and sporting days, for example, were held over the years of the mill's operation. Teams representing Henry's Mill competed in games of football, cricket and tug-of-war against nearby townships and other sawmills (e.g. *Colac Herald* 7 April 1909). The Mill also hosted an annual picnic for employees and former workers, usually held in January when the weather had some chance of being fair. A large charabanc conveyed employees of the firm's Geelong timber yard to the rail terminus at Forrest, where they transferred to a timber tram for the journey out to the No.1 Mill. It was an opportunity for the town-based employees to meet, get to know and re-acquaint themselves with the bush mill workers and their families. Various log chopping contests were also popular events on such occasions. While gratitude was expressed to the Henrys for providing the outing, it was almost certainly the boarding house proprietress and other women of the mill who prepared dinner for the multitude (e.g. *Colac Herald* 30 Jan. 1924).

Importantly, there were also physical expressions of communal belonging at the No.1 Mill. The school building, for example, was a potent physical symbol of the stability of the community, and the importance its members attached to educating their children. Squeezed in among the family houses, the building signalled the participation of the mill within the wider world, and the authority of the state within the lives of the residents. While the school had the immediate advantage of occupying the children and preventing them from 'running wild', it was also established as an incentive for men with families to settle at Henry's, thereby promoting, it was hoped, a more stable community and workforce. As well as having children

gathered under its roof during the week, the schoolroom provided a focus for social events which helped bring mill residents closer together.

School fundraisers, for example, in the form of Saturday evening dances, were popular with mill workers. The school desks were removed, the floor was waxed and music was provided by mill hands playing the accordion, harp and violin. Entry was one shilling, ginger beer was a penny a glass, and the girls sold bunches of violets and other flowers they had grown in the school garden. A Christmas fete was also held one year to raise money to buy books for the pupils—games were held and prizes offered, then the schoolroom was cleared again for music and dancing. Almost £30 was raised in this way (Branditt 1922).

Involvement in such school events had the potential to overcome other divisive loyalties of politics, class and religion within the mill community. The provision of schoolbooks may well have represented a cause in which all the residents felt they could make a contribution. It is unclear, however, to what extent the single men at the mill became involved. Lacking children of their own, some may have felt they had little to gain or contribute by participating in school-oriented events. Others, however, may have welcomed the opportunity for involvement, even vicariously, in family and community life, and to escape another evening in the cold, cramped huts they called home.

Other expressions of belonging included the planting of exotic trees and shrubs around houses. Surviving examples include Scots pines, oaks, hydrangeas, arum lilies and a South American *Cestrum elegans*, plants with little practical purpose beyond the pleasure their flowers and appearance conveyed. They provided a familiar sense of 'garden' in an environment otherwise dominated by logged hillsides, mud and weeds. Householders also cultivated gardens to supplement food supplies brought in from outside, while children grew flowers and vegetables in the schoolyard. The erection of fences around yards and gardens created boundaries, and signified the desire to claim, however notionally, some parcel of land in a context where neither individual nor group ownership of housing was feasible. In a harsh environment people did what they could to make the place feel like home and to express their individuality. In an industry characterised by a high turnover of workers, planting also demonstrated a commitment to remain at the mill for a season or two at least.

Conclusion

The settlement at Henry's Mill, like most industry towns, was characterised by its ephemerality. It was never meant to last for long. Although the timber lasted for almost a quarter of a century, the temporary nature of the mill was typical of the industry and acknowledged from the beginning. It was created with a built-in obsolescence. The buildings and layout of the mill were of a short-term, expedient design, never intended to satisfy longer-term demands of established community.

Nevertheless, there is evidence that a sense of community was fostered at Henry's Mill. Picnics and sporting events involved most of the mill population. The school and the education it provided to the mill children played a crucial stabilising role in settling families at the site, as well as offering a venue for dances, religious services and other social functions. Exotic trees and shrubs were planted for the pleasure of their appearance and the sense of attachment they imparted, where a house yard, at least, could be modified and claimed from the surrounding bush.

This sense of attachment, however, should not be overstated. The timber industry was renowned for the mobility of its workers, and Henry's was no exception. Individuals and households were continually arriving and leaving, always seeking better conditions, better pay, some improvement in their circumstances. Few people stayed at the mill more than a few years, restricting any sense of common identification with the area. One of the simplest social distinctions, marital status, received stark confirmation in the physical separation of single men's huts from married quarters. Some men were unionised, others were not. A few enjoyed the security of permanent employment, but most worked on contract. Labor voters and Catholics were prominent, causing unease to the non-Labor Protestants. It may be more appropriate then to regard the mill essentially as a place of work, one where most people resided for shorter or longer periods, contributing somewhat marginally to a sense of communal belonging. Although physically isolated, people at Henry's Mill were not totally cut off from the wider world. They were as conscious as any of the often overlapping struggles of class, politics and religion, bringing these tensions and fears, as well as hopes and expectations, with them to their work and lives at the forest mill.

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21

Days of nature in Australia

Libby Robin

At the time of federation, when the first national coat of arms was designed, embraced by the kangaroo and the emu, economics rather than environment was a key to Australia's symbolic moments. The kangaroo and emu were unusual in their irrelevance to international trade and Australia's status as an economic nation in the world. In the celebrations of the first federation day in Sydney, for example, the parade passed through ten arches and the flags of eighteen nations. These represented Australia's economic partners in Britain, continental Europe and America, and her chief exports—wool, wheat and coal.[1] Australia did not celebrate her natural or indigenous cultural advantages in the pomp and ceremony of this day, except for that coat of arms.

A movement that actively linked Australian nature and nationalism was, however, emerging. Our indigenous nature might not have impressed our trading partners, but increasingly, it was promoted as a way to build good citizens at home. Arbor, Bird and Wattle Days provided opportunities for celebration of local nature and reflection on the nation in schools and communities. In an era when white Australia was anxious about its youth and its identity, 'nature days' were powerful naturalising agents for settler Australians. Planting trees, observing birds and wearing wattle all provided scope for pride in Australia and its natural environments. Other young

settler nations adopted this tactic too. The children of New Zealand in 1910, for example, were exhorted to plant trees because:

> every single tree planted ... on Arbor Day helps to make the country brighter, and richer, and healthier, and happier—more like 'God's own country' than it was before.[2]

Although 'nature days' had different emphases in different places, most had an implicit aim to foster good citizens.

Citizenship in Australia, for British Australians, demanded embracing a foreign nature, a nature that was not part of British literature and expectations. By the time of Federation, the 'biological cringe' that saw Australian birds, animals and plants as 'inferior' was being challenged, but the entrenched low status of Australian plants and animals remained an obstacle to their full appreciation.[3] The mid-nineteenth century poet Adam Lindsay Gordon's view of Australia as a land of 'scentless blossoms' and 'songless birds', was explicitly challenged by C. J. Dennis's poem, *The Golden Whistler*:

> Long ere this my song has shamed
> Him who fatuously named
> This a land of songless birds.[4]

Dennis's poetry was part of the celebrated *Bulletin* school of the 1890s that contributed much to the spirit of nationalism in the years leading up to Federation. The rural pastorale was a constant theme of the pages of the *Bulletin*. It celebrated the great outdoors (as opposed to the smoky cities), but focused on cleared, 'settled' country, and on its sheep, cattle and crops. The nature of bushland areas was less part of its celebrations. Other institutions and individuals were left to celebrate the 'original outdoors' of pre-European contact. Days of nature were part of a broader effort to celebrate the distinctively Australian bush and forests. Like the *Bulletin* writers and cartoonists, Arbor and Wattle day activists were anxious about degeneration associated with city life, but their solution was not the rural pastorale, but Australian nature itself. I want to begin with one institution and one individual, who, in various places were credited with conceiving the first Wattle Day in September 1899. The Australian Natives Association and Archibald Campbell each also had significant roles to play in Arbor and Bird Days.

Australian Natives Association and nature

The Australian Natives Association was established in 1871 as a mutual benefit or friendly society, but it quickly became also 'a mutual improvement and national association'.[5] By the 1880s, the ANA was one of the forces

pushing hardest for a federated Australia.[6] Membership of the ANA was limited to males born in the Australian colonies; women were seen as too high an insurance risk.[7] The heart of its membership came from the gold-fields centres around Ballarat, Victoria, the children of gold-rush immigrants who had just reached their twenties. This group resisted the negative stereotype of the Australian-born prevalent in their parents' generation.[8] They knew that they were not just lazy, sport-loving, foul mouthed and lacking respect for authority, but they needed ways to challenge these misconceptions. The Australian-born embraced the ANA as an effective institutional and cultural challenge to the ongoing power of immigrants. Here was an organisation that celebrated Australian-ness and excluded the power brokers of the day. At the same time, the ANA society replaced 'ritual mumbo-jumbo' typical of friendly societies imported from the Old Country (for example, the Oddfellows, the Manchester Unity and the Foresters), with ways to improve themselves: debates, lectures and mock courts.

There was growing support for 'a national flower or emblem' for Australia, like 'the rose for the Englishman, the thistle for the Scotlander and the shamrock for Old Ireland'.[9] The ANA, impressed by Canada's successful promotion of the maple leaf as representing all things Canadian, decided to campaign to make the wattle the flower for the federating nation of Australia. They put forward fourteen arguments in its favour, including its presence in all colonies, its utilitarian value in tanning hides and its bright beauty. Eventually, despite strong bidding for the more spectacular, but geographically limited waratah, the ANA (with the support of the Wattle League) held sway, and the Golden Wattle *Acacia pycnantha* became a national floral emblem, representing an egalitarian Australia:

> The wearing of the blossom at the same time alike by people of all classes and creeds and political parties...is meant to impress upon the mind and the imagination of Young Australia in particular that on the day of its exhibition everybody stands forth as an Australian.[10]

The choice of a wattle important to the South Australian tanning industries of Mt Lofty as the 'national' emblem can almost certainly be traced to the first Wattle Blossom League, inaugurated on 13 March 1890 by the ladies' committee of the ANA No. 1 Branch in Adelaide. A year later on 'Foundation Day' (26 January 1891) they publicly displayed their Wattle Blossom Banner. It was eagerly embraced by most other states by 1912. On the 31st August that year, buttonholes of wattle and boronia (then the Western Australian emblem) were sold in Perth.[11] Meanwhile, on 10 September, 'under the auspices of the ANA', wattle blossom was 'everywhere in the city' of Hobart.[12] It even went international: the London

department store Selfridges filled its Oxford Street store with 'mimosa' to honour Australia's 125th birthday on 26 January 1913.[13] Perhaps the strongest evidence for Australia's embracing of the wattle as floral emblem was the outrage roused when South Africa elected to have wattle embroidered on the Coronation Stole in 1910. William Ey of Tanunda wrote to the *South Australian Register* on the subject:

> We have lost a great lot of the commercial value of our beloved wattle tree by selling them seed, justly or otherwise; but we shall certainly not permit South Africa, without protest, to plume and decorate themselves with our feathers.[14]

William J. Sowden, president of that ANA branch and distinguished journalist and later editor of the *South Australian Register*, was a strong advocate of both wattle and women's suffrage. Like many of his fellow ANA members, he was born in Castlemaine in the heart of goldfields Victoria. His adult years, however, were spent in Adelaide.[15] He sought (in 1896) to 'reorganise and remodel the Wattle Blossom League [as] the first visible recognition of the fact that the women of South Australia interested themselves in public life.'[16] The ANA's mutual benefit business also benefited from its association with nationalist debates – the number of branches and its funds rose steadily throughout these discussions. In the twenty years from 1881 until 1901, 194 new branches were established in Victoria alone, and by the 1890s all states had branches although Victoria had some 80 percent of the national membership.[17] Indeed by 1900, the sharp-witted *Bulletin* cartoonists depicted the ANA Presidency as a 'prize' which would guarantee a seat in the Federal Parliament.

Despite its name, the absence of Aboriginal people from the early debates of the Australian Natives Association is total, although somewhat later, it adopted Aboriginal welfare as one of its concerns.[18] The cause to 'improve' the naturalising Europeans born in Australia was paramount in the pre-Federation and early Federation years. Nature study was one key to both moral improvement and embracing indigeneity (of environments, if not peoples), and warmly supported.

The ANA offered prizes for school gardens from 1903 and encouraged Arbor Days as ways to stimulate nature study in schools.[19] Sponsorship of gardens and tree-planting also served to promote the ANA amongst the children's families. The State School was, in the words of influential first Director of Education in Victoria, Frank Tate, an 'efficient' way of reaching into nearly every home. 'Wherever a dozen children can be got together, you will find the State school'.[20] The *Gazettes* of the Tate era (1902-28) reflected

the aspirations not only of teachers and students but also of the community, all very much a part of Tate's 'Education System'.

Nature, women and children travelled together on the ANA agenda. Its most important 'whole family' initiative was embracing the beginning of spring through Wattle Days. After many years of the ANA offering no benefits to over half the population, in 1900 an Australasian Women's Association was formed. Special joint events such as Wattle Day celebrated the softer feminine side of life, but the mainstream ANA remained a men-only club.

A. J. Campbell and Wattle Day

The ANA was not the only force behind Wattle Day. The influential ornithologist and newspaper columnist Archibald James Campbell was the founder of the first private 'Wattle Club' in Victoria in 1899, which visited such wattle-rich places as Werribee Gorge, the You Yangs and Eltham annually around the first of September. Although eligible as an 'Australian-born', he was not a member of the ANA.[21] He took up the cause of making the wattle truly national with passion and enthusiasm. Starting in 1908 with an audience of the Photographic Clubs of the Melbourne Technical College, he gave a lecture 'Wattle time or Yellow-haired September'. The 'Yellow-haired September', was a reference to the poetry of his friend, Henry Kendall, who co-founded the ornithological journal, *The Emu,* with Campbell in 1901. The 'wattle time' lecture was modified and adapted to several other audiences and finally published in 1921, richly illustrated with the images that had appeared originally as lantern slides.[22] He too, was interested in the 'feminine' side of wattle:

> As our theme, 'Yellow-haired September' with her plaits of gold is suggestive of the feminine gender, it is to be supposed that many of our pictorial illustrations, whether allegorical, idealistic, or purely botanical, will be accentuated by the introduction of the human female form – the *beau ideal.*[23]

The mythical and unnamed feminine figures obligingly posing amongst the Cootamundra, the Silver and the Empire wattles were perhaps there to evoke the young nation, like nature, represented as feminine.[24]

Gould League and Bird Day

Although nature herself was feminine, nature study was not just for the ladies. It was also seen as a powerful, positive and 'civic' influence in the lives of growing boys, the nation's 'next generation'. Perhaps the most important study for active, enthusiastic tree-climbing boys was birds and their nests. The prevalence of egg-collections was testimony to their enthusiasm, and efforts were made to harness this and redirect it to more citizenly ends. The Gould League of Bird Lovers (later, the Gould League of Nature Lovers) brought together two distinct national concerns often treated as separate enterprises: the moral improvement of citizens and the nation's economic future.

Jessie McMichael, the school teacher who suggested a bird-protection league to the Director-General of Education in Victoria, observed that: 'the thoughtless destruction of bird life would lead to an increase in numbers of insects, which would if left unchecked take a disastrous toll on crops of all kinds'.[25] The fact that birds were aesthetically pleasing and that bird-observation was a worthy, citizenly activity was not the prime reason given for the League, although Frank Tate would have been very sympathetic to such reasons. McMichael felt that threats to bird safety were so significant that it was important to invoke 'economic ornithology' in the service of conservation. Farmers were inclined to blame birds for crop failures, and to shoot them as pests, so she identified this line of argument ahead of other concerns, although the international plumage trade was at its peak and local bird-nesting was a widespread hobby in the first decade of the twentieth century.

Dr H. W. Bryant, an enthusiastic member of the Bird Observers' Club of Melbourne was also keen to have a day for the celebration of Australian birdlife, and suggested the name 'Gould League' to honour John Gould who named more new species of Australian birds than anyone before or since.[26] Bird Day was conceived as 'a corollary to Arbor Day', an institution that was already established and successful.[27] It would raise consciousness of the need for the preservation of birds, in the way that Arbor Day supported the restoration of trees. Both days were also about the new nation and the sorts of citizens it wanted. With the strong support of the new national group, the Australasian Ornithologists' Union, the Gould League was founded in Victoria in 1909. Its first Bird Day was held in Victoria on 29 October 1909. Within a year the movement had spread to New South Wales, South Australia and Tasmania as well.[28] Jessie McMichael provided generous donations and an endowment for competitions and prizes.[29] The Prime Minister,

Alfred Deakin, hero of the ANA in the pre-federation years, consented to be the Gould League's inaugural president.[30]

In New South Wales, the *Public Instruction Gazettes* (like the *Gazettes* in Victoria) promoted nature study and bird study in particular. A. G. Hamilton advocated that 'School bird study should begin with the birds of the playground, and gradually extend to wider fields'. Bird-spotting was a training ground for scientific observation:

> Children should record the birds seen and their observations on them in their note-books, and in a wall chart, such as that published in the 'Gazette' for June 1911 . . . The local name and, if possible, the scientific name of the birds should be recorded.[31]

It was also, for the teachers, a way of introducing the truly local into the curriculum and developing a local sense of place. Tate's introduction to the 1911 edition of John Leach's *Australian Bird Book* advocated making Australian nature more familiar and more part of mainstream culture, including literature: 'It is time we Australians fought against the generally received opinion that the dominant note of our scenery is weird melancholy', he wrote.[32] He blamed awkward scientific names for the paucity of Australian birds in poetry, quoting a clumsy 'romantic' poem published in the *Argus* to make his point:

> Dear, all the secret's ours. The Sharp-tailed Stint
> Spied, but he will not tell—though you and I
> Paid Cupid's debts from Love's own golden mint,
> While Yellow-bellied Shrike-Tits fluttered nigh.[33]

The Gould League, then, was to change all this. Leach took some immediate initiatives with names, changing the 'White-throated Thickhead' to the Golden Whistler and the 'White-winged Caterpillar Eater' to the White-winged Triller, but such name-changes were controversial and resisted by conservative ornithologists. Hamilton, a fellow educator, did not see a particular problem in the fact that there were thirty local names for the babbler or chatterer (*Pomatostomus temporalis*) around the New South Wales country town of Wellington. He advocated inventing names where no local name was known, and did not see why (local New South Wales names) 'peewit, blue wren and jacky winter should be altered to magpie lark, superb warbler and brown fly-catcher'.[34] By contrast, the Royal Australasian Ornithologists' Union, whose first interest was the birds, not the children, was much more concerned about the need to communicate reliably between districts, and to develop a *national* bird vocabulary. The tensions arose most

sharply where Leach and others aggravated old intercolonial rivalries by advocating the national adoption of dominant Victorian names.

From 1910, Queensland joined the other States in producing a special 'Bird Day' issue of *School Papers* (magazines issued regularly to schools by the State governments), although it was 1916 before Queensland had a Gould League and associated Bird Day.[35] The Gazettes and School Papers were free and widely read, not just by children but by their parents as well, so they proved an excellent way to reach the adult public as well as the children. Eminent ornithologists willingly contributed copy in all States, and the quality of the text material was high.[36] In Queensland, the *Daily Mail* journalist Alec Chisholm took the lead. When he left the State in 1922, he received a charming letter signed by 106 students from Southport State School:

> Dear Sir,
>
> We the pupils of the Southport SS regret that you are leaving this State. Many of us, largely through your influence have become members of the Gould League of Bird Lovers.
>
> We wish to thank you for the many interesting articles and photographs which you have given us from time to time in the Queensland School Papers. Your writings have taught us much about birds, to love them more, and to understand more clearly how worthy they are of protection.
>
> Our best wishes will be with you for the future and we feel sure that you will continue to take an interest in the boys and girls of Queensland.[37]

In fact, once the Gould League in Queensland lost Chisholm and his ornithological passion, it soon amalgamated with the Queensland Naturalists' Club to form a 'Nature Lovers' League', later superseded by the Wild Life Preservation Society of Queensland.[38]

The New South Wales Gould League, strongly supported by the active Ornithological Section of the Royal Zoological Society of New South Wales, published *Gould League Notes* and sponsored a variety of field camps, exhibitions and bird-call competitions. At the end of each bird-call competition, the imitators would co-operate to produce a Dawn Chorus—'as each child seeks to out-whistle or out-call the other, the result is a terrific hullabaloo'.[39] The League also sponsored a badge for 'any boy or girl who can induce a native wild bird to alight on his or her person'. In four years an astonishing five hundred children received the award.[40]

Nature Day activities were sometimes misguided. The so-called 'Arbor Day activity' at one Gippsland school resulted in all the trees on the block adjacent to the school being removed.[41] Alec Chisholm recalled an early Bird Day in central Victoria where the school party was walking through the bush with a teacher:

> 'leading' in the fashion of a Zoo-visiting father—well in the rear—while the kiddies rambled along with an aimless noisy heartiness calculated to scare every undomesticated creature in the neighbourhood. Presently one bright boy spied the nest of a Yellow-tufted Honeyeater. He yelled gleefully, made a hurried grab, and within the next minute was triumphantly presenting the dainty cradle, with its trio of hapless baby birds, to the accredited leader of the expedition.[42]

Chisholm commented that in later years the difference between bird-nesting and bird observing was better understood, and bird study became a favourite in schools. With the slingshot banned, wild birds were coming into school yards at lunchtime. 'I have seen wild birds catching flies from the hats of children and eating crumbs at their feet', wrote the Director of Nature Study in South Australia, where Bird Clubs were most popular.[43]

It was not just the children who misunderstood days of nature. The destruction of wattle in the interests of Wattle Day reached such proportions that farmers within a day's drive of Melbourne were locking up their properties and writing angry letters to the papers. Even Archibald Campbell Jr, son of the founder of the Wattle Day Club, found his property targeted. 'Acacia Orchard' at Kilsyth, where he grew 300 trees of 50 species, suffered from 'motorists who tear the limbs from trees to festoon their cars only to discard the wilted bloom along the road when they reach the outer suburbs'.[44] Killing the trees for their blooms (and leaving farmers' gates open) could hardly be regarded as in the interests of nature or the nation. Perhaps because of wattle over-enthusiasm and the glaring lack of a 'Wattle Conscience', the charities which had so successfully raised money through Wattle Day sales just before and during the war years, replaced the national flower with less controversial 'button day' fundraising efforts.[45]

During the inter-war years, the Gould League went from strength to strength. Chisholm's estimate in the early 1920s was that, nationally, more than 200 000 children had joined 'nature study' leagues. Competitions were a way to ensure that such numbers interacted with each other, and were hotly contested. In Victoria, the Bird Observers' Club sponsored a solid silver Leach Memorial Shield for Gould League competitions from 1930 to 1935, in memory of the League's founder, who died in 1929:

> Above the shield is the figure of a Kookaburra also in silver...[and] the words 'Leach Memorial Club', and five small shields each inscribed with the name of a winning school.[46]

By 1935, the Gould League president, Arthur Mattingley, could boast that the league had 100 000 members in Victoria alone.[47] In 1931 the New South Wales Gould League sponsored the first edition of the important field-book, Neville Cayley's *What Bird is That?*, 'as a memorial to the League's "coming of age" '.[48] Although the Royal Australasian Ornithologists' Union (RAOU) was happy to extend 'patronage' to the Gould League, it refused to take responsibility for 'any expenses in connection with formation of branches of the League'.[49] Each State therefore had to find its own source of branch funds. Generally, the main source was the relevant Education Department, which tended to keep the Leagues (and their associated Bird Days) state-based, with little national co-ordination.

One of the most active Gould Leagues was the last to begin. A Western Australian League was first mooted in 1920, when the RAOU came to Western Australia for its annual camp-out and congress. The *West Australian* reported Dr Leach's comments that there were plenty of birds in the West. 'There is no reason why a "Bird Day" should not be as necessary here as it is in the Eastern states.'[50] But it was not until 1939 that a Gould League of Bird-Lovers of Western Australia was established with the support of the Western Australian Natural History and Science Society and the Director of Education, Charles Hadley.[51]

The Gould Leagues were most famous for their campaigns against egg-collecting. The first pledge made by all children was 'I hereby promise that I will protect native birds and will not collect their eggs'.[52] By the outbreak of World War Two, the *Emu* reported 'visible results': the public was 'definitely becoming "nature minded"...[and] egg collecting by children [had been] reduced to a minimum'.[53] The other great concern articulated by Jessie McMichael was improving relations between farmers and birds. David Campbell's poem *Delivering Lambs* captures the very real anxiety of the sheep farmer confronted by a crow:

> I have seen black crows ride sheep like jockeys. There's one or two
> I've settled scores with. Their eyes are a primrose blue
> When they turn on the wind with wings like sooty fingers;
> But their cry can lead you to ewes cast in the mist
> And you thank God when they've eyes and their lambs have too.[54]

This antagonism was challenged not so much by the Junior League, but by adult members of the ornithological community, who embraced science in the service of 'economic ornithology'. They analysed many crops and guts

to find out what birds really ate. They were able to show that some supposed villains regularly shot by farmers or orchardists were actually eating insects and grubs harmful to crops. Many of these results were recorded in early *Emus* and economic ornithology was a regular theme of Australasian Ornithologists' Union (later RAOU) presidential addresses.[55] Ornithologists also advised government agencies on ways to enforce laws. Although Education departments increasingly took control of Bird Days and other celebratory days of nature, they were still reported in the ornithologists' journal *Emu*. A.J. Campbell (of Wattle Day fame) was its editor from 1901-1913, and was succeeded by Bird Day enthusiast, John Leach from 1914-1923.[56]

Valuing nature

'Nature study is not science', Liberty Bailey declared. 'It is spirit. It is concerned with the child's outlook on the world.'[57] As such it was the discipline that dealt with the intersection between humans and the environment —or the study of nature and its meanings. It promoted 'close observation, clear reasoning and a profound emotional response', and the 'sense of wonder' about nature was the most important outcome of an education in nature study.[58] Nature Study in schools grasped to find a hybrid between the 'loved' and the economic, the warm-hearted and the hard-headed, and to use a scientific method in service of both. 'To appreciate is dependent upon understanding, and this comes with observation.'[59] The celebratory days of nature in schools and community reflected changing emphases in the meaning of nature for people in Australia (and elsewhere) over the twentieth century.

The Gould League of Bird Lovers, established in 1909, has been one of the major avenues of bird-study for school children in Australia for nearly one hundred years. Nature emerges from the early literature of this and other similar organisations, such as the Young Gardeners' and Junior Tree Lovers' League as something to be loved for the sake of human health. Loving nature is an essential part of spiritual and moral growth in children.[60] Yet there is another nature at work here too. The nature of farmers or foresters, is a suite of resources to be wisely used, not wasted. Children planting trees for New Zealand's Arbor Day were told:

> We cannot keep the kauri, and the rimu, and the totara for ever, but we can at least plant trees to take their place, to supply us with timber, and to protect us from droughts, and landslips and floods.[61]

The Gould League was similarly established to inculcate in children the ideal of responsible citizenship and supporting the economic uses of nature. There has been some softening of the economic emphasis as the League has evolved. A recent definition described the Western Australian Gould League as 'an environmental study club for all interested in nature study'.[62] Such a definition might leave open the possibility that nature study could include nature that was independent of what it could do for humanity (either morally or economically).

Wattle Day was the most aesthetic and human-centred of the three. Its nationalism was overt. It was also less child-centred than the others, though the adult activities of its early years were specifically directed at 'Young Australians'. The three taken together were strong 'naturalising' forces for a new nation in search of an identity, and together contributed to a growing sense of pride in Australian nature.

Nature and its history

On 26 January 2002, Aboriginal activists took down the coat of arms from Old Parliament House in Canberra. 'The kangaroo and the emu are sacred images for Aboriginal peoples', Kevin Buzzacott, the spokesman for the group said. He saw the appropriation of local animals for Australia's formal arms as a mark of disrespect for Aboriginal laws and customs.[63] Thus began a campaign to be followed by High Court writs to wrestle back for Indigenous peoples the rights to Australian national symbols.[64] But which symbols? The spray of wattle underneath the coat of arms remains unchallenged in this battle. Perhaps it was not worth challenging because of ongoing uncertainty about whether it is or is not part of the coat of arms. When the Coat of Arms was drawn in 1912, it was:

> accompanied by small branches of wattle, ornamental rests for the supporters [the kangaroo and the emu] and a scroll with the word 'Australia', none of which are actually mentioned in the 1912 Royal Warrant.[65]

In 1913, this was formally amended. The Commonwealth Government *Gazette* included a coloured copy of the Commonwealth Coat of Arms 'showing the floral accessory of a wattle bloom'.[66] But anxiety about whether this is or is not legally sufficient has persisted.

In 1988 there was, as part of the Bicentenary Celebrations, yet another formal declaration that the Golden Wattle *Acacia pycnantha* was to be Australia's national floral emblem.[67] On 23 June 1992, the Governor General

declared that 1 September would be observed as a 'National Wattle Day'—'an opportunity for all Australians to celebrate our floral heritage, particularly through the planting of an Acacia species suitable for the area in which they live'. This announcement brought together the traditional concerns of Arbor Day and Wattle Day, and tied them to the general tree-planting enthusiasm of the Decade of Landcare. It is a prime example of the flexibility of celebratory days of nature to serve new political goals. Tree-planting today is never far away when the latest concern, salinity, is mentioned. But this constant evolution of purpose may mask a long history of, for example, wattles representing Australia (including with the sporting colours of green and gold) or in the numerous postage stamps of Australian wattle.[68] The earlier focus on the wattle of Wattle Day (or the bird, or the ceremonial trees of Bird and Arbor days) is lost in a wider more encompassing view of the 'environment in general'.

By the mid-twentieth century there was growing awareness of the idea of a 'web of life'. The educator F. G. Elford explained to the readers of *Wild Life* in 1945 that the (relatively new and not widely known) science of ecology studied the 'web of life'—the interdependence of natural systems.[69] Ecology was important in the new post-war secondary subject of 'General Science', which included an introduction to Australian biology for all Year 10 students. The final year Biology Text, developed in the 1960s and published by the Academy of Science, was also called *The Web of Life*.[70] Primary school nature study teachers were also urged to teach 'the whole environment of man'.[71] Nonetheless, the emphasis of most nature study classes was on detailed observation of single species. The aesthetic of wonder and the beauty of nature were integral to nature study, and the discipline emphasised a personal relationship between the knower and the known.

Nature in the late-twentieth century and the new millennium is often approached at a 'whole environment' level. It is less personal, more integrated, and allows for the important interrelationships in nature that are not known or not noticed by humans. It seems to be less anthropocentric than the nature that was the subject of primary school nature study in the 1940s. But it is an abstract, distant nature and often expressed in terms of problems. Tree-planting, for example, may be regarded as a solution to 'salinity', rather than an opportunity to enjoy trees. The 'holistic view' of environment, often, in practice, is reduced to abstract, economically significant, tradeable elements, some positive and some negative, all of them valued in dollars.[72] Quality-of-life and imaginative responses to nature are not marketplace commodities, and do not fit this model. It is important that days of nature

such as Wattle, Arbor and Bird Days retain their earlier history of celebration, whilst evolving in the light of new knowledge. They have an ongoing potential to contribute a richer meaning for nature in Australia today.

Notes:

1 J. Keenan, *The Inaugural Celebrations of the Commonwealth of Australia*, Sydney, 1901. See also Libby Robin, 'Fleecing the Nation', in *Country and Calling: The Journal of Australian Studies*, No 62, St Lucia, University of Queensland Press, 1999, 150-8; 254-6.

2 *The School Journal* (Class V & VI), 1910. This reference was kindly drawn to my attention by Tom Brooking.

3 Tom Griffiths, 'Ecology and Empire: Towards an Australian History of the World', in Griffiths and Libby Robin (eds) *Ecology and Empire*, Edinburgh: Keele University Press, 1997, 1-16, discusses the biological cringe at length (see esp. 3). The term is also used by Nick Drayson in 'Early developments in the literature of Australian natural history together with a select bibliography of Australian natural history writing, printed in English, from 1697 to the present', Unpublished PhD thesis, Australian Defence Force Academy, Canberra, 1997.

4 See Anon, 'Australian Birds in Australian Poetry'. C. J. Dennis (1876-1938) was born six years after Adam Lindsay Gordon (1833-1870) died.

5 'Objects' of the ANA as published in 1938-9.

6 John E. Menadue, *A centenary history of the Australian Natives' Association 1871-1971*, Melbourne: Horticultural Press, 1971.

7 In 1900 the ANA founded the Australasian Women's Association, but the ANA itself continued as a bastion of male dominance for most of the 20th century, until it was amalgamated with Manchester Unity in 1993 to form Australian Unity (see John Hirst, 'Australian Natives Association' in Graeme Davison, John Hirst and Stuart MacIntyre (eds) *The Oxford Companion to Australian History* (Revised edition), South Melbourne: Oxford, 2001, 50).

8 This argument was advanced by John Hirst in *The Sentimental Nation: The making of the Australian Commonwealth*, Melbourne: Oxford University Press and the Centenary of Federation, 2001, 36-9.

9 Menadue, *Centenary history*, 307.

10 *South Australian Register* 26 August 1912 [Cutting in the private Campbell archives, held by Ian Campbell, Sydney, and kindly shown to the author]. See also A. J. Campbell 'Wattle memorabilia' in *Golden wattle, our national floral emblem*, Melbourne: Osboldstone, 1921, 62.

11 *West Australian*, 2 September 1912. Later, the Red and Green Kangaroo Paw *Anigozanthos manglesii* was proclaimed the floral emblem of Western Australia (on 9 November 1960).

12 *Argus*, 11 September 1912.

13 *Daily Express* (London), 27 January 1913, 7.

14 'The Stolen Wattle Blossom', *South Australian Register* 22 May 1911. This aroused much discussion as South Africa does in fact have several native wattles, but the majority (c. 80%) of *Acacia* spp. are indigenous to Australia. Another author (news clipping, n.d. c. 1910, no source, 1369, Campbell archives) suggested that 'the Protea should be adopted

by our friends at the Cape...no jealousy could arise elsewhere'. The wattle in question was probably the one imported from Australia and which is now such a problem in the Cape. The Republic of South Africa formally adopted the King Protea in 1975, after a commission was set up in 1962 that recommended *Protea cynaroides*, but this was resisted because of the limited distribution of the species (in the western Cape only). (Jane Carruthers, e-mail, 11 January 2002; http://www.saembassy-jakarta.or.id/symbols.html, accessed 5 February 2002).

15 Carl Bridge, 'Sir William John Sowden (1858-1943), in John Ritchie (ed) *Australian Dictionary of Biography*, Vol. 12, Carlton: Melbourne University Press, 1990, 24-5

16 *Adelaide Observer* 18 July 1896, 43 cols. A-C.

17 Funds in Victoria rose from just over £1 000 to £32 000 in the decade to 1891. Figures were not given for 1901 (possibly because of the effects of the 1890s depression). Membership in Victoria rose from 430 in 1881 to 19 168 in 1901 and 30 321 in 1911. An interstate comparison in 1909 showed a total membership of 34 436 with 27 320 from Victoria, compared with, in decreasing order of size, 2453 (Western Australia), 1349 (Queensland), 1326 (New South Wales), 1018 (South Australia) and 880 (Tasmania). There were also branches in New Zealand (until 1905), South Africa and London. (Menadue, *Centenary history*, 26-30; 143, 162-8). By 1939 the national reserves were a staggering £1 250 000. (See ANA *Combined Syllabus* Melbourne: ANA 1939, back cover.)

18 There were some appropriations of Aboriginal motifs in these early years, but a strong 'white Australia' agenda left no political sympathy for Aboriginal people. Hirst, *The Sentimental Nation*, 39; Menadue, *Centenary history*, 311.

19 Libby Robin, 'Gardens, Patriotism and the Defence of Forests', in John Dargavel (ed.), *Australia's Ever Changing Forests IV*, Canberra: Centre for Resource and Environmental Studies and the Australian Forest History Society, 1999, 54–68. Also Libby Robin, *Building a Forest Conscience*, Springvale: NRCL, 1991, 12, 30.

20 See Frank Tate's introduction in Victoria: Education Department, *The Education Department's Record of War Service 1914-1919*, Melbourne: The Department, 1921,4-5. See also Robin, 'Gardens, Patriotism and the Defence of Forests' and R. J. Selleck 'Frank Tate (1864-1939)' in Ritchie (ed) *Australian Dictionary of Biography* Vol. 12, 169-72.

21 He was a member of the Oddfellows. [A. J. Campbell personal diary, Campbell archives]

22 Campbell, *Golden wattle*, 15 and 62.

23 Campbell, *Golden wattle*, 18.

24 The youngest figure posing with a wattle is less than two years old and not female! Duncan Campbell, A.J. Campbell's youngest son stares out slightly bewildered beside the Sunshine Wattle, *Acacia discolor*. (Ian Campbell *pers. com.* 9/1/02, e-mail 16/1/02.) The accompanying caption 'The sunshine of Autumnal days', was possibly a double reference to the wattle and to the only son of his second marriage, who was born when Campbell was in his sixties.

25 *The Gould League of Victoria*, 1976 (Education Department brochure, typescript). The Gould League has been variously 'of Bird Observers', 'of Bird Lovers', and 'of Nature Lovers'. By 2000, it was simply the Gould League, and its pledge is 'to care for all wildlife, both plants and animals' (from Membership Certificate). The Gould League has been a major force in nature study for school children in Australia for nearly one hundred years, with varying importance between states. After the second world war, it became largely the responsibility of the different state Education Departments, and was

particularly strong in Western Australia, and vanished entirely from Queensland. See Libby Robin, *The Flight of the Emu*, Carlton: Melbourne University Press, 2001, 79-87.

26 Bryant letter in *Education Gazette*, 20 October 1909, quoted by A.H.E. Mattingley, 'Origins and Aim of the Gould League', *Monthly Notes*, 14 May 1935. On John Gould see J.H. Calaby, 'The European Discovery and Scientific Description of Australian Birds', *Historical Records of Australian Science*, 12 (3), June 1999.

27 Mattingley, 'Origins and Aim of the Gould League'. On the history of Arbor Day see Robin, 'Gardens, Patriotism and the Defence of Forests'.

28 The Tasmanian Gould League lapsed soon afterwards, but re-established itself about 1920 and ran until 1954. South Australia also had several false starts, but the league there was active in the 1920s and 1930s, and was relaunched in 1982. (C. F. H. Jenkins, 'The Gould League in Australia', in *John Gould and the Birds of Australia*, Perth: Gould League of Western Australia, 1983, 45–7.) 'Bird Week', as it is now called, is traditionally the last week in October in the south-eastern States.

29 Jenkins, 'The Gould League in Australia', 42.

30 *The Gould League of Victoria*. Deakin used the 1893 ANA conference to establish the Federation League of which he became foundation executive chairman in 1894.

31 A.G. Hamilton's 'How to Study the Birds', first published in the *Gazette* of 30 September 1911, was reprinted in *Australian Naturalist* 2 (9), February 1912, 121–3.

32 Frank Tate, 'Introduction' to J. A. Leach, *An Australian Bird Book*, Melbourne: Whitcombe & Tombs, 1911, 3.

33 Tate, 'Introduction', 4. See also Jenkins, 'The Gould League in Australia', 39.

34 Hamilton, 'How to Study the Birds', 122.

35 The first meeting of the inaugural committee was held on 25 June 1914, but the Bird Day was not until 1916.

36 *Emu*, 10 (2), December 1910, 156.

37 3 November, 1922. A.H. Chisholm Papers, Mitchell Library, Sydney (hereafter Mitchell) MS 6245/1 'Correspondence'. Following the signatures, there was a separate endorsement from C. Hibbard, Head Teacher.

38 Jenkins, 'The Gould League in Australia', 45.

39 A.H. Chisholm, 'Very Strange Voices', in Bird Wonders of Australia, Sydney: Angus & Robertson, 1948, 199.

40 Jenkins, 'The Gould League in Australia', 43.

41 Robin, 'Gardens, patriotism and the defence of forests', 57.

42 A.H. Chisholm, 'With Children in Birdland', in *Mateship with Birds*, Melbourne: Whitcombe & Tombs, 1922, 70–1.

43 Quoted by Chisholm, 'With Children in Birdland', 74.

44 'Wattle vandals', (Melbourne) *Herald*, 24 July 1926; Acacia Orchard statistics from 1921. See Campbell, *Golden Wattle*, 28.

45 'Wattle Conscience' from 'Wattle vandals'. Wattle Blossom sales for charity in Melbourne on 2 September 1912 raised £847. See Campbell, *Golden wattle*, 62.

46 BOC, *Monthly Notes*, 5, November 1931.

47 Mattingley, 'Origins and Aim of the Gould League'. This number was a cumulative total. Three years later it was recorded that '114 000 have signed the pledge', *Emu*, 38, 240.

48 Jenkins, 'The Gould League in Australia', 43.

49 RAOU Council, 29 November 1910.

50 *West Australian*, 30 October 1920. Cuttings file collated by Mr P. E. Petherick, Cottesloe, and deposited in the RAOU archives, SLV MS 11437 Box 11(a), 'W.A. Visit and Conference Press Cuttings'.

51 Its initial membership was 2000, and by 1955 it had risen to 18 000.

52 'The Gould League of Bird Lovers', *Emu*, 38 (2), October 1938, 240.

53 'The Gould League of Bird Lovers', 241.

54 As quoted in Anon. 'Australian Birds in Australian Poetry', *Bird Observer* August 1997, 11. David Campbell's dates are 1915-1979.

55 Presidential addresses included 1906, 1907, 1908 and 1912, published as C.S. Ryan, 'President's Address: The Protection of native birds', *Emu* 6(3), 1907, 95-103 (which also proposed the combined Arbor and Bird Day); A. J. Campbell 'Bird Protection in the Old World', *Emu* 7(3), 1908, 126-36; D. Le Souëf., 'President's Address: The Most Useful Bird in Australia', *Emu* 8(3), 1909, 169-70; J.W. Mellor, 'Bird Protection in South Australia', *Emu* 12(3), 1913, 151-7 (which discusses Bird and Arbor Day in South Australia and the Gould League). See also L. Harrison, 'A Bird Protection Society'. *The Australian Naturalist* 1(13), January 1909, 155-6, and 'Stray Feathers', *Emu* 14(3), 1915, 171.

56 Robin, *Flight of the Emu*, 377-8. Alex Chisholm, who inspired the Queensland group was also editor from 1926-1928 inclusive.

57 Quoted in Victoria. Education Department, *Nature-study (observational work)*, Melbourne: Government Printer, 1945, 4.

58 These were the views of W.H. Ellwood, Tate's successor as Director of Education in Victoria, in *Nature-study (observational work)*, 4

59 W.H. Hills, Principal of Hobart Teachers' College. 'Foreword' in J. A. Fletcher, *Brochure of nature study: suggestions and experiments for use.* Hobart: Mercury Press, c. 1933, 3.

60 See Robin, *Building a Forest Conscience* on school gardening, school forests and Junior Tree Lovers, 65-82.

61 *The School Journal* (classes V and VI), 1910.

62 Gould League of Western Australia, *Everything you want to know about the Gould League but are afraid to ask*, Perth: The League, 1982, 1.

63 *Canberra Times*, 28 January 2002, 1.

64 The campaign is not widely supported by Aboriginal groups, and may backfire and lose much goodwill for little gain. See 'Absurd abuse of writs harms struggle for overdue justice', *Canberra Sunday Times*, 3 February 2002, 22.

65 http://www.pm.gov.au/aust_focus/nat_symbols/coatofarms.htm. 7 Feb. 2002.

66 Commonwealth Government *Gazette* No. 3, 18 Jan 1913. According to A. J. Campbell, this official formal representation endorsed the wattle's status as part of the Arms, and the national symbolism was reinforced with the issue of a geranium pink penny postage stamp with Wattle Blossom design in December the same year. See Campbell, letter to the editor, [Melbourne] *Herald*, 16 January 1925. [Campbell archives].

67 http://www.pm.gov.au/aust_focus/nat_symbols/emblem.htm 4 Feb 2002, authorised by Prime Minister.

68 A short search of the web revealed that Australia issued postage stamps featuring wattles in December 1913 (1d), 1937 (3d), 9 September 1959 (Golden Wattle)(2s3d), 27 April

1970 (Golden Wattle) (5c), 1 June 1978 (45c), Christmas 1982 (35c), Australia Day 1990 (Golden Wattle) (41c), 1996 ($2), amongst others.

69 Ped (F.G. Elford), 'Ecology in General Science', *Wild Life*, Vol. 7, November 1945, 351.

70 Frank Fenner (ed) *The first forty years*, Canberra: Australian Academy of Science 1995, 273-8; Libby Robin, *Defending the Little Desert*, Carlton: Melbourne University Press, 1998, 63-4.

71 W.H. Ellwood in *Nature-study (observational work)*, 4.

72 Such elements are dependent on a particular sort of dominant (global) economics—so not just 'human' centred, but Western biased.

22

Early Queensland forestry: George Board and Philip MacMahon

Peter Holzworth

The contribution of two men closely involved in the setting up and management of government forestry in Queensland is outlined in this chapter from professional and personal perspectives. The two men are George Leonard Board, the first Inspector of Forests in the Queensland Forestry Branch and Philip MacMahon, his successor as Director. The period primarily covers the first decade of forestry in the twentieth century but has references to the establishment of a Forestry Branch of the Queensland Department of Public Lands in the latter part of the nineteenth century. The personalities and work achievements of both men are outlined and their contributions to the organisation are explored and acknowledged.

George Leonard Board

George Leonard Board was born in Geelong, Victoria in 1852, the son of George Board. George senior owned a cotton mill in Geelong at the time but left the area and moved to Pimpama in Queensland to try his hand at growing cotton for the mills, but was unsuccessful. He travelled to America to see how it was done and never came back!

George Leonard Board, Inspector of Forests, 1900-1905
Photo: Museum of Lands, Mapping and Surveying, Department of Resources and Mines, Brisbane.

George Leonard Board, the subject of the first part of this paper, attended Geelong Grammar School. Some years later, on 23 May 1877, he married Sophia Deighton, daughter of Edward Deighton of Deighton Estate, Highgate Hill, at St Andrew's Church, South Brisbane. George and Sophia had nine children, two of whom died in infancy. Another child, a daughter, drowned at Lowood in southern Queensland (Bourne 2001, pers. comm.). The following comments by Mrs Bourne serve to introduce some personal information of her grandfather, George Leonard Board.

> My mother, Marjorie Board, married a World War I returnee who was advised to move to the country for his health, being shell-shocked and wounded. They lived at Bald Knob near Maleny, and I, being the first child, was sent to my grandparents to attend school in Brisbane. I lived with my grandparents from the age of six, and was seven years old when my grandfather (George Leonard Board) died. I can only remember a nice, quiet old man who used to sit in a squatter's chair on the verandah reading the paper and smoking a pipe. He passed away in 1932.

A man of peace, it appears, in his declining years. Later testimony serves to corroborate and enhance the above sketchy view.

There is some confusion over the correct given names of the first subject of this paper. It is currently thought by his family that George Leonard Board was referred to as Leonard, rather than George, in order to avoid confusion between the son and the father. The younger man was called Leonard by his wife and associates and indeed this appellation appears at the end of many public documents under his title. But, according to family sources, his name appears as George Leonard Board on the certificate of birth of his eldest daughter and those of his marriage and death. It would seem from the overwhelming evidence of the certificates that his two given names, in order, were George Leonard and this paper will refer to him as such.

Early days in the Department of Public Lands

George Leonard Board became the first Land Commissioner of the Nanango Lands Office in 1877. Subsequently he acted in that position in Gympie, Maryborough, Bundaberg and Gladstone. In 1884, Board reported to the Queensland Government about increased timber revenue and the issuance of various licences in his Gympie district. He also recommended further reservation of land as timber reserves, solely for timber production. He also argued that proper restrictions be placed on timber-getters in regard to mature trees to allow them to be cut before they became over-mature and useless to the timber industry. In the same report he announced the appointment of a ranger 'to take charge of the Kin Kin Reserve, and besides carrying out his ranger's duties, he is to take steps to form Forest Nurseries on that reserve...' Board went on to mention the freeholding of property by selectors throughout his Gympie region (DPL 1884). His 1885 annual report made reference to the importance of reservations.

> Several new reserves have been made during 1885, and several others amended so as to include within their boundaries large tracts of good

> timber country; and although this may lock up the land from settlement, yet it must be borne in mind that it is due to the State to protect and foster the growth of young timber and to guard against the evil apparent in the other colonies - dearth of available timber.

In the following year he again warned of overcutting and suggested that the introduction of 'a system of forest conservation as the country becomes denuded of timber' would be in the interests of both the public and the Department of Public Lands. At this stage, business in the timber industry was buoyant and the revenue derived therefrom amounted to £988 being £460 from licence fees, and £528 from sales of standing timber (DPL 1886).

Steps towards forest conservancy in Queensland

Board's push for forest reservation as a bulwark against over-cutting the commercial forests in Queensland was not the only move in this direction (there had been concerns raised in the State since the 1860s by men of conscience and a Select Committee on Forest Conservancy took evidence on the issue in 1875) but also a small step on the road to conservancy.

Many notable men of the nineteenth century voiced their disquiet at the lack of some form of control over forest exploitation. A motion for the creation of a Forestry Department was raised in the Queensland Legislative Assembly in 1889 and carried, but no action immediately ensued. Nevertheless, the notion of setting up a forestry administration and accompanying conservancy had at least gained high level recognition and approval in Parliament and in 1890, at the request of the government, a number of reports were prepared (Powell 1998). Commissioners involved in recommending on the reports included P. McLean, Under-Secretary for Agriculture, P. MacMahon, Curator of the Botanic Gardens, A. McDowall, Inspector of Surveys and former District Surveyor at Maryborough, F. Byerley, Mining Surveyor Rockhampton, C.H. Barton, school teacher of Maryborough and George Leonard Board, Land Commissioner at Gympie. Board and MacMahon were destined to become respectively, the first and second Heads of Forestry in Queensland. It was left to MacMahon (aged 32) to espouse the utilitarian view of forests in the wash-up of that 1890 meeting, a decade before the inauguration of the first Forestry administration and some fifteen years before MacMahon himself became Director of Forests in Queensland:

> The basis of conservancy in Queensland for some years to come, and indeed its backbone for all time, must be the management of sufficient portions of her natural forests in such a way as, while allowing them to be used for the purposes of life, will secure a perpetual

> succession of mature, healthy and marketable timber ... It cannot be too clearly known that over-reservation is in its effects nearly as bad as no reservation at all. When a tree reaches a certain stage good forestry requires that it be cut; so that the idea is not to lock these forests up (MacMahon cited by Frawley in Powell 1998).

This is an impressive statement, coming from a young Irish botanist who had been in the country only two years. Surely he was moved by the arguments of committee members such as Archibald McDowall, a keen advocate of forest conservancy; and Board, the Land Commissioner who favoured forest reservation.

The Commissioners recommended a plan of forest management emphasising forest conservancy, regeneration and the extension of forests into treeless areas. They also advocated the setting aside of five types of forest reserves. But the recommendations were not immediately acted upon.

Later, in 1896, George Leonard Board (now Land Commissioner of Maryborough and Gympie) in his report to the Government, re-stated his support for forest conservation throughout the State; reinforcing the recommendations of the Commissioners some years earlier (DPL 1896). In an 1897 report from the same Department a further step was mentioned:

> It is worthy of consideration whether the time has not arrived when it is desirable to appoint an experienced officer as Conservator of Forests for the purpose of inspecting and reporting as to the best means to be adopted for the preservation and prevention of waste of the indigenous timbers and the profitable disposal of same.

A Forestry Branch was created in 1900 in the Department of Public Lands and an Inspector of Forests, George Leonard Board, was appointed to the position along with two forest rangers in supporting field roles. From a forestry viewpoint this was a fitting conclusion to the nineteenth century and to the beginning of government-approved forest conservancy.

Board's controversial appointment

The appointment of Board in 1900 to the position of Inspector of Forests was not without controversy. There were many applicants from 'many generally capable men', according to *The Brisbane Courier* (circa May 1900). One was Philip MacMahon, Curator of the Brisbane Botanic Gardens.

In the country centres where Board had held the position of Land Commissioner, he was generally lauded. *The Maryborough Chronicle* (circa May 1900) was pleased for his attaining promotion because 'he is without doubt one of the most experienced and capable men in the Lands Department ...

and will make it a most serviceable and important office'. In the *Wide Bay and Burnett News* (circa May 1900), similar sentiments were espoused but unintentionally he was damned with faint praise in some respects because the column referred to Board as 'a model civil servant, hardworking, obliging, and always courteous. He is one of the few men in Maryborough who is naturally polite'. Board was seen by *The Gladstone Observer* (circa May 1900) as able and most reliable, adding:

> He invariably conducted the business that came before him without fear or favour, and his uniform impartiality and the courtesy he extended to all won for him the respect and esteem of those who had business dealings in his office, or for that matter outside of it ... That he was an officer not easily to be replaced may be concluded from the fact that his removal to Brisbane as Inspector of Forests has provided openings for the appointment of three or four other gentlemen who as far as can now be ascertained will have to do just what has been done single-handed [*sic*] by our departing Land Commissioner.

The Gympie Times (circa May 1900) congratulated the Government for having made a wise selection, stating that Board's new position was another example of his being 'the right man in the right place'.

But there were supporters of his main rival, MacMahon, as well as detractors. The Public Service Board originally supported MacMahon, a move that the then Queensland Minister for Agriculture, the Hon. J.V. Chataway described as 'a very strange choice'. Chataway owned the Mackay *Mercury* and acted as Brisbane correspondent to his own newspaper, or 'rag' as it was described by a journalist of a rival press. On 12 May, three days after the appointment of Board, Minister Chataway wrote a letter to his newspaper.

> The Board went, not for the other Board, but for the Curator of the Botanical Gardens—a very strange choice considering recent events, but it seems that Mr. M'Mahon claims a special knowledge of forestry, and writes on the subject. Even were this knowledge of practical value, there was surely enough in recent events to condemn the proposed appointment, yet so thoroughly did the applicant rely on the recommendation of the P.S.B., that he considered himself as good as appointed.

The middle course was perhaps steered by *The Brisbane Courier* (circa May 1900) which was of the view that the final choice for the position of Inspector of Forests was based on securing 'a man conversant not only with the timber lands of the colony, but with all the conditions under which the lands are held or worked, rather than a scientist...'

The Public Service Board, appointed by Parliament to make non-political appointments, initially favoured MacMahon but was forced to appoint George Leonard Board. In trying to make a non-political decision, the Board had fallen foul of the government, the Minister for Agriculture, the Minister for Lands and the country press, at least. The *Mail* (circa May 1900) in Bundaberg aggressively stated that 'the P.S.B. were [*sic*] decidedly eccentric on this interesting occasion—it is to be hoped they are not often taken that way—and wanted to give the appointment to one who seems to have done nothing of late calculated to enforce his claim'. Board won the day and was appointed on 16th May 1900 at a salary of £500 per annum.

Inspector of Forests

George Leonard Board took up duties as Inspector of Forests of the newly created Forestry Branch of the Department of Public Lands on 1 August 1900. He had limited staff that included the Crown Land Rangers: F.W.H. Lade, appointed to oversee North Queensland from Cairns, and Gilbert Burnett assigned to southern Queensland, based in Nanango.

On the last day of 1900, the area of timbered lands set aside in temporary reserves in Queensland was 1 622 855 acres (656 770 ha) and this was declared inadequate to meet the needs of the State's inhabitants, it being considered there was a pressing need 'to make further reservation of well-timbered lands where necessary and to ascertain what timbers the Department will retain' (DPL Forestry Branch 1900). Revenue for the first year of establishment of the tiny Forestry Branch was only £7607.

Ringbarking was prevalent throughout the State and Board requested Land Commissioners within the wider Department to inspect large areas of Crown land whose lessees had been granted approval to clear for pasture production or other reasons, with a view to preventing the destruction of valuable timbers. Attention was also given to proclaiming reservations near railway lines of lands containing good quality hardwood suitable for railway timbers. Inspections of Fraser Island plantations, originally established by McDowall several years previously, were carried out; but the results were disappointing due mainly to neglect. Progress in forest administration however was slow due to the size of the timbered estate and the ridiculously low staff numbers.

The investigations of the State's forests provided reports of some massive trees. A Martintown cedar with a volume of 28 330 super feet (85 cu. m) and a girth of 35 feet 4 inches (10.7 m) some five feet (1.5 m) from the ground was discovered. It was valued at £77. (The whereabouts of Martintown is unknown according to the Queensland Department of Natural Resources

and Mines. There was a railway township called Marton just to the west of Cooktown during the early 20th century, but the forests around Cooktown did not support wet tropical rainforests). A kauri pine was found on a Kin Kin reserve with a girth of 28 feet (8.5 m) and a volume of 30 000 super feet (90 cu. m). But there were also reports of the immense waste of red cedar. Mention also was made of problems with lantana and prickly pear in the forests.

In 1902, Queensland relied chiefly on imports of hardwood and pine from New South Wales and kauri pine from New Zealand. However the State exported red cedar to New South Wales and Victoria, some hoop pine and silky oak to New South Wales and sandalwood to China.

In order to understand fully the nomenclature and physiology of Queensland forest species, collections were made of the State's timbers—80 during 1902—which were housed in a Forestry Museum. In the previous year some specimens had been donated by Messrs Wilson Hart and Co., the Land Commissioner of Goondiwindi, and others interested in the project.

Concern was still being felt at the destruction of trees and there was talk of extensive ringbarking and timber waste in north Queensland where in previous years over sixteen million super feet Hoppus (48 052 cu. m) of timber could not be utilised because it was not possible to 'fresh' it over the Barron Falls. During this period, consideration was given to replacing timber licences with a system of purchase based on royalty. This way, individual timber removals could be regulated rather than having timber cut and removed on a broad area basis irrespective of the volume removed, simply by paying a license fee with no restrictions on the extent of extraction.

During 1902, cedar saplings from scrub roads were transplanted into a north Queensland State Forest reserve at East Barron using sites along both old and freshly opened tracks. There were also experiments with red cedar cuttings at Kamerunga State Nursery in Cairns. Seed of hoop, bunya and cypress pine as well as red cedar was supplied to private nurseries (DPL Forestry Branch 1902).

The patterns set in the years since inauguration were followed in 1903. There was increased reservation of lands for forestry purposes and recommendations made for a National Park at the Bunya Mountains. The timber display increased in size and was exhibited at the Queensland National Association Exhibition and later at a venue in Melbourne. Discussions with timber-getters on the need for artificial regeneration of forests were also the order of the day. There were trial shipments of mangrove bark to Germany to test the suitability of the material for tanning and, oddly enough, experiments on obtaining rubber from mangroves!

In 1904, scenic reservation was suggested at Mowbullan and Mount D'Aguilar. By then, Beauty Spots had been declared at places such as Tully Falls. Timber Regulations were gazetted on 6 October 1904 and were scheduled to come into force on 1 January 1905. There was continuing need for permanent reservation of commercial forest land to combat pressure from other land uses such as dairy farming. The Annual Report of the young Forestry Branch for 1904 outlined a fundamental purpose for the organisation: 'To most jealously guard against the alienation of our timber reserves from which our future supplies are to be provided.'

In 1905, Board's final year as Inspector of Forests, Queensland boasted 338 reserves covering a total area of 3 606 709 acres (1 459 635 ha). Royalty systems were re-established, abolishing the old licensing system and there were new strictures placed upon timber-getters. Prescribed minimum girths were set for the cutting of trees, other than for mining or railway timbers, and no timber was to be removed from the point of cutting until measured and crowned by a Land Ranger. One person in thirteen was directly dependent on the timber industry for a living.

Philip MacMahon was appointed Director of Forests on 2 November 1905, replacing George Leonard Board who remained in the Department of Public Lands. On 24 August 1911, Board, then Chief Clerk, was promoted to Chief Clerk and Inspector in that Department. He retired in 1921 and moved to 40 Ekibin Road Annerley, possibly to be near his wife's cousins. Board died on 17 May 1932. He was 80 years old at the time of death (Bourne 2001, pers. comm.).

Some personal details

Board, in his youth, was a keen Australian Rules football player and cricketer. In his mature years, he was seen as an experienced and capable officer who well knew the timber lands he presided over in his District roles. He was objective in his decisions on land dealings and was perceived by most as a polite and hardworking civil servant. *The Gladstone Observer* (circa May 1900) regarded him as urbane and even-handed. *The Maryborough Chronicle* (circa May 1900) described him as a man of 'tact, kindly advice and never-failing courtesy'.

At a send-off in Maryborough at the Royal Hotel, Board was the recipient of a silver salver on which was inscribed: '*Presented to L.G. Board, Esq., by Maryborough friends on his promotion as Chief of Queensland Forestry Department*'. The officiating Mayor said that Board:

> had carried out his duties unostentatiously and fairly in this district ... If impartiality, consistency and gentlemanly demeanour were qualities

> that they were called upon and bound to respect, then Mr. Board deserved well of the people of Maryborough and district. (*The Maryborough Chronicle* , c. May 1900).

There were several other speakers at the send-off, all in praise of Board; so much so that he was moved to respond that 'they would make him vain before they had finished with him'; that would have been a most unlikely outcome.

Philip MacMahon

Philip MacMahon was born in Dublin on 13 December 1857. Thirty-one years later, he became Curator of the Botanic Gardens in Brisbane and in 1905 the Director of Forests, Queensland. The following quote from J. Harrison (1994) summarises his early career in horticulture in Britain and his moves to India and Australia.

> By the time he was eighteen years of age, he had obtained technical education from private tutors as well as having travelled extensively on the Continent. Developing a love for horticulture, an obsession shared by his father and grandfather, he was invited to England by Francis Dickson, head of the great nursery firm of Dickson and Sons. There MacMahon attracted the attention of Sir Joseph Hooker, director of the Royal Gardens, Kew, where he accepted a studentship. Next he was offered the curatorship of the Botanic Gardens, Hull in Yorkshire where he stayed for five years, probably being the youngest curator ever appointed within Britain at that time.
>
> At the age of 24 he accepted a tropical agricultural position in India but developed serious health problems. In July 1888, therefore, he sailed to Australia, to Melbourne where he worked as a journalist for Fitchett of the *Daily Telegraph* honing skills evident in his later report-writing. The next year MacMahon met a ministerial party from Queensland, visiting Mildura with the Hon. Hume Black. In Melbourne he was introduced to Sir Thomas McIlwraith with the result that an offer was made to organise a forestry department in Queensland.

The Blue Book confirms his appointment on 24 April 1889 (Harrison 1994). The Blue Book was the book of personnel records in the Department of Public Lands, Brisbane. Sir Thomas McIlwraith was Premier of Queensland at that time.

Philip MacMahon, Director of Forests, 1905-1911
Photo: John Oxley Library, Brisbane (neg. 94328), undated.

Five months later, on 6th September 1889, the Queensland Legislative Assembly carried a motion in the House to create, *inter alia*, a Department of Forestry. There was no immediate action. In fact, 'the Queensland government decided not to proceed with the project so MacMahon accepted the position of Director (Curator) of the Botanic Gardens' (Harrison 1994).

Philip MacMahon worked conscientiously and efficiently as Curator of the Brisbane Botanic Gardens from 1889 to 1905. During his term of office, his early involvement as a Commissioner reporting on forestry issues had given way to management matters botanical. Yet in 1900 he was interested in

the fact that a Forestry Branch was to be created in the Department of Public Lands and an Inspector of Forests appointed. He, along with several others—including George Leonard Board, with whom he had worked in committee—applied for the position, which Board held until 1905.

Director of Forests

MacMahon succeeded Board as Director of Forests on 2 November 1905. In the same year he published (as Director of Government Botanic Gardens, Brisbane) an impressive book entitled *The Merchantable Timbers of Queensland (Australia)* subtitled: 'With Special Reference to their Uses for Railway Sleepers, Railway Carriage and Wagon Building, Engineering Works'. It was authorised by the Hon. Digby Frank Denham MLA, Secretary for Agriculture. The book of sixty-eight pages had text, plates, maps, tables and illustrated microscope sections of wood. It was a comprehensive 'science of the day' work. He acknowledged the contribution of engineers and botanists. The book was written to describe the timber and forests of Queensland in order to further the State's export of railway timbers, especially sleepers, to South Africa and India. It was a remarkable achievement for someone with a background in botany, not forestry or engineering. The John Oxley Library has a copy of this work in its rare book collection. Department of Primary Industries, Forestry library also has a copy.

MacMahon served a term of just over five years. On taking office from Board he continued to press for increased forest reservation:

> A much larger proportion of the forest revenue should be devoted to forest conservancy and management ... and what would I do with it (increased revenue)? Well looking at the figures I have just quoted it seems like asking a starving man what he would do with a 'bath bun' [a sweet, spicy bun containing dried fruit] (DPL Forestry Branch 1906).

But how was he to manage such forests, with only a tiny workforce? He mentions in his 1906 Annual Report that:

> the assistance of four District Forest Inspectors and a junior clerk is not enough to enable one to do the work necessitated in the control of three and a half million acres of extremely valuable public estate, scattered over an immense area... (DPL Forestry Branch 1906).

The following year he suggested that smart young country Queenslanders could be given special education in the new Forestry Branch and thus become good foresters.

The heavy logging of the State's forests for hoop pine and other timbers was still in progress and MacMahon found this lamentable:

> In fifty years hence probably there will be no pine in Queensland save in pleasure grounds; cedar will be a memory, and hardwood of the present quality and dimensions will be unobtainable (DPL Forestry Branch 1908).

But his administration by 1908 was not committed to a large scale plantation programme—a future form of insurance against forest depletion—though it had been considered. It was felt that money was better spent on natural forest improvement. There was also the threat of insect and fungal pests in plantations. But in the 1910 Annual Report of the Department of Public Lands (dated 31 July 1911, three months after MacMahon's death), the Under Secretary of the Department was moved to write that 'it seems not improbable that Queenslanders will soon be using exotic imported pine or local pine plantation grown timber' (DPL Forestry Branch 1910). It is likely that Director MacMahon, who died before writing his report, would previously have expressed such sentiments to the Under Secretary.

Director of Forests, Philip MacMahon died of dengue fever on an inspection of Fraser Island on 14 April 1911. He had worked hard to further the aims of the organisation. He foresaw the 'new' plantation forestry; he began surveying the limit and quality of his forest assets and he furthered the acquisition of forested lands. The national importance of forestry was continually stressed and he saw forestry in an international context.

Some personal details

MacMahon was a rather small, dapper man. He was a good horseman and it was a requirement of the times that one had to handle oneself well on a horse to get a job that would entail a lot of riding (Harrison pers. comm. 2001). MacMahon's obituary mentions his keen interest in scientific horticulture, his poetic temperament, lively imagination and ready tongue. It goes on to say that he was 'an Irishman possessed of considerable personal charm, and when he entered Kew as a journeyman gardener in 1881 he quickly came to the front as a speaker and writer'. He was put on a rather exalted pedestal during those early years:

> At that time the Mutual Improvement Society at Kew was a debating body of no mean order. I have heard discussions at the society's meetings that would have done credit to societies of much greater pretensions. James Hartland, John Deacon, Bernard Shaw, William Kennedy, Augustine Brenchly, George Marchant, Frank Ross, Michael

> Barker, John Hall, John Fraser, Harry Witty, and Philip MacMahon were some of the promising young men of that period who made a good impression whilst at Kew, and have kept up their heads since. Whatever was in hand, work or play, business or pleasure, these men put their backs into it, and Philip MacMahon was one of the leaders (MacMahon's obituary 1911).

The Bernard Shaw referred to was indeed George Bernard Shaw, Irish dramatist, critic and novelist. MacMahon's obituary further mentions: 'He appears to have done good work in the forestry department and was about to realise his hopes for an extension of his sphere of usefulness.' Philip MacMahon, Director of Forests, Queensland, 1905-1911, had indeed done good work for Forestry.

Conclusion

The first decade of Forestry in Queensland from 1900 was necessarily one of tentative beginnings, limited staff and privation of funds. The aims of the tiny Forestry Branch were modest and the unit was dominated by the historical weight and direction of the Department of Public Lands. But there was no lack of enthusiasm if the Annual Reports to government were anything to go by. Board, the first Inspector was a popular, courteous and mild-mannered land administrator. MacMahon, his successor, was a man of the trees, a feisty Irish botanist with style and the ability to debate well and impress those in power.

Both men steered the Forestry Branch ably during the first decade of the twentieth century. Reservation of timbered lands was greatly increased, investigations and surveys of forests were undertaken and collections of timber samples made. Silvicultural experiments were carried out in north Queensland and concerns were expressed at the heavy and uncontrolled logging and associated waste of timber. At the end of the decade plantation forestry was forecast and the Branch considered itself an international entity. It had been a sound start to professional forestry.

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23

Kim Kessell: a first class sensible bloke

Jenny Mills

Historian Inga Clendinnen spoke about the importance of memory; how it was like a silken scarf pulled from a magician's pocket, the more the magician pulled, the more scarf appeared from the pocket in all its many colours (Clendinnen 2001). It is memory and all its coloured strands that compels me to write of Stephen Lackey (Kim) Kessell, West Australian Conservator of Forests 1922 - 1945, who during his lifetime created an outstanding prescription for bush fire protection and forest management which has particular relevance today. His was a regime organised with dedication and forward planning on the lines of a European forestry training but adapted to the uniquely different fire patterns of the Australian continent.

My father, Charles Bunning, was a saw miller and Kessell was one of his best friends, highly regarded as 'a first class sensible bloke', the highest accolade that a timberman could give. As we grew up, my father would thump the table and say 'in my opinion Kessel is the most distinguished forester Australia has ever had' (Bunning 1978). When I read *Burning Bush, A Fire History of Australia* by Stephen J. Pyne, the eminent American fire ecologist I realised that my father was not exaggerating. Pyne states that during his period as conservator, Kessell, 'seized the fire problem and matured into one of the great figures of Australian forestry' (Pyne 1991: 297).

S. L. Kessell.

Photo: Western Australian Forests Department, 1969. *50 Years of Forestry in Western Australia*. Perth. Government Printer. Plate No 77.

The horrific bush fires of Christmas 2001 in New South Wales have raised much debate about forest protection, fire control and forest regeneration in the Australian bush. There are theories about the physics of fire propagation and the influence of ENSO (El Nino/Southern Oscillation.) There are memories of past devastation when the fires of Ash Wednesday 1983 and Black Friday, 1939 ravaged the south east fire flume of Australia. There are memories too of Judge Stretton's resounding finding at the Royal Commission into the 1939 fires that, 'These fires were lit by the hand of man' (Stretton 1939: 5).

Australian forestry managers appear to have forgotten Conservator Kessell's international and national reputation on fire prevention and control. It appears that Kessell laid the foundations within the Western Australian Forest Department for what came to be recognised later 'as the most effective forest fire management agency in the world' (Shea 2002: 15).

Kessell was born at Wollongong, New South Wales on 17 March 1897 in the heart of the Australian east coast fire flume. He was the son of the Rev. S. Kessell, a Primitive Methodist minister and both his parents had been missionaries in Fiji. (Cleland 1997). The family were of Cornish stock. Kessell obtained a forestry degree from the University of Adelaide and spent a short time with the South Australian Forestry Department before he went as an AIF Field Engineer to the First World War. After the war he gained a Diploma of Forestry with distinction at Oxford University (Western Australian Forests Dept 1969: 85). Kessell trained at Oxford under Professor William Schlich (Carron 1985: 148).

Schlich, who had been Inspector General of Forests in India, taught what came to be known throughout Europe and the British Empire as the discipline of scientific forestry. Although dominated by German thought, scientific forestry within the British civil service, became a product of Empire, as idealistic foresters sought to expound their theories. India, with a history of forestry going back to the doctors of the East India Company, led the way. There was camaraderie between the foresters, and from the 1920's they met regularly at Empire Forestry Conferences around the world. Forest management systems were devised and rules set out for topographical surveys, management plans and fire protection. However these were European systems and were not always applicable, especially in the fire dependent eucalyptus forests of Australia. In Western Australia creativity was needed to understand this very different forest with its valuable stands of jarrah (*Eucalyptus marginata*) and karri (*E. diversicolor*) hardwoods, which had been drastically overestimated and overcut for export for more than seventy years.

In 1920 Kessell was employed as Assistant Working Plans Officer and Forestry Instructor in the Forests Department of Western Australia. The Conservator of Forests, Charles Edward Lane Poole, trained at the famous French forestry school at Nancy, won recognition for his work in drafting the West Australian *Forests Act* (1918). By this act, assented to in 1919, there were to be classifications of timberlands; State Forests dedicated; reserves created and saw milling permits issued that were not to last longer than ten years; Permit areas were to be auctioned and royalties paid (Mills 1989: 275). This Act was considered a landmark in Australian forestry. Unfortunately, in implementing his forest policy, Lane Poole, a somewhat arrogant man fell foul of the state government of the time, the timber union, the local sawmillers and the powerful London-owned Millars Combine. There was much antagonistic discussion in the *West Australian* newspaper and in 1921 an unhappy Lane Poole resigned. A Royal Commission was called to look into all aspects of forestry administration and Kessell was appointed Acting Conservator at the remarkably young age of twenty-four. By 1923, just before his twenty-sixth

birthday he was made Conservator. A year later he married Barbara Sawell, the daughter of a goldfields doctor (J. Cleland 1997).

Kessell inherited a difficult situation but once the final report of the Royal Commission, in November 1922, repeated the necessity for strict forest management regulations including fire control measures not always agreeable to the powerful agricultural interests, he was able to create an organisation that was admired throughout Australia (Meyer 1985: 43). Unlike the eastern states, with their chequered forest management history, he was lucky that he could start with virtually a clean slate once the big Combine leases and concessions were terminated in 1929. 'This extraordinary tenure brought stability to forestry' and was 'the best balanced and most comprehensive fire establishment of all the states', writes Stephen Pyne (1991: 297-8).

As one of the principles of scientific forestry, commercial wood production was the Forest Department's major responsibility. The forests were to be managed in perpetuity on a sustained yield basis. Three-fifths of the sawmilling royalties were allotted for forest regeneration. This meant that without returns from the forest industries Kessell could not implement his policies. Kessell acknowledged that the timber industry played an important role in the state's economy. It also employed families at sawmills and supported the infrastructure of the ports at Fremantle, Bunbury and Busselton. (Kessell 1928a: 4-5). It was important to get industry on side. Kessell set about educating the powerful timber industry on the need for sustainability. He was lucky that the younger leaders were mostly engineers with university degrees who were amenable to his ideas. He also had to get the politicians and agriculturalists on side. Charles Bunning says:

> With the government of the day he was not above using flattery. Some how he managed to see that the Premier of the day was also the Minister of Forests. He would explain that if something had been a contentious issue in the past and become political it was best to have control at the base ... He had a clear brain and was a strategist and a negotiator (Bunning 1978).

Kessell had amazing confidence and charm, which he used to establish himself among the coterie of older foresters such as Lane Poole, Norman Jolly and Harold Swain. He believed passionately that, 'forestry is a profession which entails long and specialized training' and 'also a proper understanding of the economics of forestry and a knowledge of engineering to provide a sound basis for the management and economic utilization of the forests' (Kessell 1934b: 6).

While adhering to his European training, Kessell was able to adjust and compromise with Australian conditions so that by the 1930s he had finalised

working plans for both the karri and jarrah forests. Fire protection for the expanding State Forests and regeneration in the cut over Northern jarrah forests were his primary objectives. While doing everything he could to prevent catastrophic fires within the forest, he learnt to use creeping controlled fire as a successful regeneration tool in the jarrah forest. 'The steady development of the practice of forestry under Australian conditions is constantly indicating the need for modification in methods and opinions', he wrote (Kessell 1928b: 104).

> Reviewing the debate about fire use in both America and Australia, he left no doubt that while he distrusted controlled fire he was enough of a pragmatist to use it extensively so long as the practice remained within the parameters of systematic forestry. He recognised too, the value of burning for eucalyptus regeneration (Pyne 1991: 298).

Kessell employed a staff of young professional foresters, mostly trained in South Australia. Several of these men were to make their names nationally and internationally in the forestry world (Rule 1967: 66,67). Under Kessell's leadership a pine re-afforestation programme was established and research carried out into many aspects of wood technology. Forestry cadet training was considered important with scholarships offered to the Australian Forestry School. To this end a *Primer of Forestry* (1925) for schools was produced, as well as a *Forester's Manual* in five parts covering many aspects of forest training (1927). Kessell wrote that 'The efficacy of legislation provisions for the prevention of fire depends...on public sympathy and much can be accomplished by popular education' (Kessell 1928b: 101).

In 1926 systematic mapping of the hardwood forests began. These plans showed details of roading, tracks, drainage systems, timber tramways, sawmills, settlements, private land boundaries and prominent ridges. Forest overseers were given set blocks to manage. Group selection on saw milling permits for production falling was introduced, so that in one area only one mature tree might be taken and in another all the trees might be clear felled leaving only a few seed trees. Fire and industry were to be the tools of silviculture (Western Australian Forests Department 1969: 29, 47).

The recommended fire regime treatment was firstly an advance burn under mild conditions for reduction of fuel on the forest floor followed by tree marking to ensure that selected trees were kept for jarrah coppice treatment or to provide seedfall. Logging removed trees surplus to regeneration requirements and then logging debris and top foliage were removed from around selected seed trees. A regeneration burn was carried out, under selected weather conditions to provide ash as a good seed bed for future regrowth. The area was then placed under complete fire protection until the regeneration

reached an age of about 15 years when it was able to withstand wildfire (Western Australian Forests Department 1969: 47).

By 1929 Kessell had his plans for the forest in place. Forty-eight forest blocks between 2 000 and 6 000 hectares were established. Foresters were appointed to each area. Fifty-eight houses for overseers and workmen were built. Some supervisors were supplied with a house on a small farm block while others lived in new forestry settlements of about five houses (Meyer 1985: 49).

The Great Depression came as a 'blessing in disguise' because while the timber industry declined and exports dropped drastically, it meant that Kessell could at last bring the saw milling permissible intake back to a sustainable level (Meyer 1985: 49). This enabled him to carry out forest cleaning and regeneration measures in the jarrah forest. By 1931 the State Government was paying sustenance to 17 000 men. Many were from the timber industry and knew the bush well. Kessell tapped into this labour force. Between 1933 and 1935, 1100 men were employed and in 1934 the Commonwealth Government subsidised the West Australian government for forestry relief payments on a one for one basis. By the end of the depression, over 160 000 hectares of hardwood forest was cleaned for regeneration and over 360 000 hectares of forest was under complete fire protection, with over 320 000 hectares given partial protection (Kessell 1934a: 31-35, Meyer 1985: 50).

Kessell managed the forest under a fire prevention regime. Forestry mobile units were established for each region to fight and control fires. They consisted of four men, a vehicle and water tanks. Each man carried a back-pack spray. Mill employees were co-opted to help fight forest fires. By 1939, 16 fire lookout towers had been built, some at the top of karri trees. This allowed observers to give fire warnings and co-ordinated fire fighting with the use of heliographs. Five hundred telephones and about 1500 kilometres of telephone line were installed to service fire towers and forestry settlements. Foresters supervised the building of 3200 kilometres of roads and 9600 kilometres of fire lines. A fire weather research station, the first of its kind in Australia was built at Dwellingup in 1934. The system identified fire hazard by relating it to the moisture content of fire fuel. Fire weather was forecast and fire hazard estimated (Western Australian Forests Department 1969: 42; Wallace 1936: 18-24; Meyer 1985: 52).

Kessell's influence extended into the rural community. After bad West Australian bushfires in 1936 it was found that protected areas in and around the forest had suffered less than unprotected rural land. The *Bushfires Act* (1937) authorised the setting up of bush fire brigades. A Bush Fires Advisory Council was announced two years later. The rural community now regarded the foresters as leaders in the fight against bushfires. In this way the foresters became leaders in land management. The Forest Department's good standing

gave it a commanding role in the organisation of all public lands in the State (Pyne 1991: 298-9, 343). 'Relentlessly, enthusiastically, Kessell, a master administrator, extended the domain of organised fire protection. Westralia become a demonstration program for all Australia' (Pyne 1991: 268).

Kessell was seconded to the New South Wales Forestry Commission for six months between 1933 and 1934 to report on its management (Carron 1985: 13; Kessell 1934b). His extensive report with its emphasis on professionalism and structure in forest management, similar to that in his home state, epitomises all that he stood for in Western Australia. After the terrible Victorian fires in 1939, that State sent a delegation to Western Australia to learn about forest protection.

Kessell was considered kindly by his subordinates but tough when things needed to be done. Among his friends he was known as Kim and considered fun at a party and good at tennis and golf. He was attractive to women. Dame Rachel Cleland, mother-in-law of Kessell's daughter Julie, describes him: 'He was medium height...a slimmish build...but sort of thick set...dark hair with brown eyes...highly intelligent. A responsive man...interested in other people' (R. Cleland 1997).

Throughout his conservancy Kessell corresponded with Lane Poole, now head of the newly formed Australian Forestry School in Canberra and Commonwealth Director General of Forestry. He also kept in touch with his friends from the Forest Products Laboratory, originally in Perth and now with the CSIRO in Melbourne. He maintained his interest in paper technology and in 1927 looked into the feasability of a woodchip industry for pulp based on the Boranup regrowth karri forest near Margaret River WA. This was not found to be economically viable (Mills 1996: 116).

'He strove to ensure best practice at every level.' (Roe 1997) This was a prime factor in his helping to found the Institute of Foresters of Australia in 1935. The Institute's aims were to promote scientific forestry and honourable practice. Members were to have a university degree. Kessell was the first chairman and had to face difficult disputes about the admission of older foresters with much practical experience but no formal qualifications (Meyer 1985: 53).

In May 1941 Kessell was seconded to the Ministry of Munitions as Australian Controller of Timber with an office in Melbourne. He was never to return to his West Australian job. For the duration of the war he was to organise timber supplies throughout Australia, controlling a large staff which covered every state. The demand for wood by the army and domestic needs rapidly overtook the timber industry's capacity (Carron 1985: 30). Kessell literally went grey in two days wondering whether to give hoop pine (*Araucaria cunninghamii*) to the Americans for coffins for their war dead and to Peters Ice

Cream for bucket spoons', remembers his daughter Julie (J. Cleland 1997). Australian forestry academic, L.T. Carron, says of Kessell's role at this difficult time:

> If Australia ever had a national forest policy in the sense of a determined line of action on a continental scale administered by an organisation supported by legislation and funds, then it was during World War Two...One couldn't get a stick of timber in Australia without the approval of Kessell and his organisation (Meyer 1985: 55; Roe 2000: 14-15).

In 1944 Kessell was invited to advise the Tasmanian government on forest policy. In his report he strongly criticised the forest management of the Australian Newsprint Mills Ltd. at Boyer. In 1946 the company appointed him as its Managing Director at Boyer (Roe 2000: 14). He could have had any forestry job in Australia, including Lane Poole's job as Inspector General of the Forestry Bureau, in Canberra; instead he chose to be a forestry administrator of the company's Tasmanian concession, another over-cut and disturbed forest, (Myer 1985: 56).

Kessell retired from Australian Newsprint Mills Ltd. in 1962 and died in June 1979. In 1951 he was awarded an MBE, which seems a meagre reward for such a man. Tasmanian historian Michael Roe writing on Kessell for the *Australian Dictionary of Biography*, perhaps has the explanation. He states: 'The man's very ease of style might have contributed to his historical image being unduly small. In all he did, Kessell went beyond supreme competence towards creativity' (Roe 2000: 14-15). Perhaps Pyne should have the final word:

> What happened to Kessell personally, happened as well with the fire protection scheme he and his staff had nurtured for so many years. The essence of the Westralian system became the essence of an Australian system. When, following the 1939 holocaust and a global war, a new generation of foresters sought to restructure bushfire protection and to infuse it with Australian nationalism, they turned to Western Australia for inspiration. If the south east posed the problem, the south west advertised a solution (Pyne 1991: 300).

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24

Saying goodbye to heritage trees

Robert W. Boden

Introduction

The concept of heritage is entirely anthropomorphic and trees assume heritage significance through their association with some human event or human perception. Thus trees planted by visiting dignitaries, trees carrying scars of Aboriginal origin and natural specimens which are outstanding in size, age and appearance are given a status which includes obligations to take special efforts to protect them. A heritage tree or group of trees may be defined as one which has 'identified social significance through association with people, events, customs or has particular aesthetic value, scientific interest or habitat value'. What is sometimes overlooked is that trees are biological organisms and although a bristlecone pine (*Pinus aristata*) may live for thousands of years, the time comes when all trees finally decline and die. In their natural habitat it may be possible to allow this process to occur unhindered. However this is not generally the case in public places where safety is an issue and at some stage decisions have to be made about removing a tree and considering whether to replace it.

Dargavel (1999) discussed Avenues of Honour and Remembrance in Australia and the changing attitudes to them with time; 'as the trees have

aged, so have memories changed'. These changes in memory have a considerable bearing on future management when the time comes to remove the trees. For example, will trees planted by visiting British royalty have the same imperative for replacement if Australia becomes a republic?

Hitchmough (1990) presented the general principles and replacement options for heritage plantings in a very practical and succinct way and these are not repeated here. By contrast McWha (1997) presented a specific management strategy plan for the Ballarat Avenue of Honour with a range of tree replacement alternatives based on assessment of individual trees. The preferred alternative was to clearfell and replant in smaller manageable sections over regular time intervals.

> The advantages of this method of tree replacement are that it can be staged over time to meet the available resources and budget, it avoids problems of competition between juvenile and established trees, and specific short-term 'problem' areas can be targeted as priorities without affecting the overall long-term replacement strategy (McWha 1997).

Issues

By virtue of its function as the National Capital, Canberra probably has more trees per hectare planted by visiting dignitaries than any other city in the country. John Banks lists 51 trees planted in the grounds of Government House at Yarralumla by visiting dignitaries between 1927 and 1988 (Pryor and Banks 1991). Others have been planted since 1988. It is becoming difficult to find space for more trees and the sea of plaques does not enhance the landscape setting.

One example of heritage tree replacement in Canberra occurred recently with four Lombardy poplars, *Populus nigra* 'Italica', in the courtyards of the Provisional Parliament House. Two of these trees were planted in 1926 by a visiting parliamentary delegation and all four had grown well and become prominent landscape features, particularly in autumn when viewed from the Australian War Memorial. By the late 1990s they had developed basal decay and a decision was made to remove them for safety reasons. It was also decided to replace them with plants raised from cuttings taken from the parent trees. This was practical for a vegetatively propagated species but what will be the approach when the bunya pine, *Araucaria bidwillii*, planted by the Duke of York in 1927 declines. Bunya pine is difficult to raise vegetatively. While the Duke's tree produces some seed it is isolated from other

bunya pines and presumably the tree is self-pollinated. This may mean that the progeny is weaker than one raised from seed taken from a tree with other bunyas nearby.

Figure 1: Aboriginal carved tree at a grave site near Molong, NSW.
Photo: Kelvin Officer, 2001

The situation with heritage trees bearing scars or carvings made by Aborigines raises other issues. Scars resulting from removal of bark to make canoes, shields and coolamons assume importance as evidence of the use of primitive tools. Their relative rarity also adds to their value. In south-eastern Australia the use of stone tools was replaced by steel axes in the mid 1800s and the practice of bark removal virtually ceased. This means that trees

which were large enough to provide bark of suitable sizes and shapes then are now 150 years older and many are in decline. Should these trees remain in situ to decline or is it appropriate to move them into museums? Is the context in which the scars were made significant to the scars themselves?

Tree carving as opposed to bark removal to make implements has special significance. It was practised mainly in central western New South Wales and south-eastern Queensland. Two or three trees were commonly carved around graves and more than 50 were commonly carved around bora grounds. The most recorded from one site were 120 from around a bora ground in central west New South Wales (Etheridge 1918).

Carved trees have an intimate association with the site and ideally they should remain in situ. Housed in a museum the tree is geographically separated from the local Aboriginal community which has no say in the housing or interpretation of the Carved Tree. Geering, Ravenscroft and Roberts (1991) discuss the issues surrounding the protection of carved trees in situ to reduce the hazards of fire, termites, vandalism, grazing stock and lightning strike. Because these carvings were made in live trees, there is the issue of callus regrowth which in some cases has led to the regrowth obscuring most of the carving. Should this callus growth be removed and if so by whom?

Archaeologist, Kelvin Officer has recently provided information on the four carved trees remaining at the gravesite of Yuranigh who accompanied Mitchell's expedition to northern Australia in 1846. The site near Molong in central western New South Wales is marked by white fences around three trees, a white fence around the grave and a tree trunk covered by a galvanised roof (Figure 1). Some callus growth has been cut back at the direction of the New South Wales National Parks and Wildlife Service.

Protection of carved and scarred trees linked to European exploration and settlement raises similar problems to those associated with trees with Aboriginal carvings. For example, a tree blazed by Blaxland, Wentworth and Lawson during their crossing of the Blue Mountains has been protected in a roofed enclosure. Considerable expense has been applied to protect the Proclamation tree at Glenelg in South Australia. Somewhat ironically the heritage citation for the Proclamation tree records that: 'The tree, a river red gum (*E. camaldulensis*), has gradually deteriorated over the years and in 1963 was remodelled in plastic and cement'. Is this taking preservation too far?

Two case studies illustrate some of the issues in managing ageing heritage trees in Canberra.

Haig Park

In March 1921 the Federal Capital Advisory Committee resolved to plant a 'belt across the Ainslie plain from the Yass Road to the trees under Black Mountain to protect the Civic Centre Area of the plan'. This was one of three shelterbelt plantings approved. The others were for Commonwealth Ave and the Power House at Kingston. The importance placed on the Ainslie plain windbreak by the Federal Capital Advisory Committee was emphasised by the fact that it replaced subdivisions for housing shown on Walter Burley Griffin's plan.

In his report for March 1921 Thomas Charles Weston, Officer-in-Charge Afforestation, stated: 'It is proposed to make the leading permanent feature of this plantation Cedars, Cupressus and Pines, using Wattles and flowering trees for immediate effect' (NAA CP 209/18 B10). There were to be twelve parallel rows of trees (an outer row of street trees was added on each side some years later). The plantation was to be 400 feet [122 m] wide and extend from the slopes of Black Mountain in an easterly direction to Canberra Avenue, at present the Yass Road. 'This at 20 ft [6 m] spacing will absorb approx 6000 plants.' Planting commenced in 1921 and in a memorandum to John Hobday, Chief Nurseryman, dated 5 August 1921 Weston wrote that: 'Planting in the E W shelter belt will be concluded in a couple of days' (NAA CP 209/18 B10). Whether this was for the entire break is not clear.

The shelterbelt was named Haig Park in 1928 after Earl Haig, Commander in Chief of the British Empire Forces, who died in 1928. Haig Park was designated as a public park in 1987. It was classified by the National Trust of Australia (ACT) on 1 July 1982, gazetted to the ACT Interim Heritage Places Register by the ACT Heritage Council on 24 April 1998 and tabled in the ACT House of Assembly as a variation to the Territory Plan Heritage Places Register in June 2000.

By the early 1980s when the oldest of the trees were about 60 years old it became apparent that some of the Monterey pine were starting to decline in vigour. The National Capital Development Commission engaged Margules & Partners Pty Ltd to assess each of the trees and prepare management options. In 1983, Margules reported that, 'Currently the park is managed under a 'static' caretaking management philosophy, largely concerned with preserving as many trees as possible and removing dead, dying and dangerous trees' (Margules and Partners 1983). They presented two management options: to encourage and increase informal diversity in tree and space pattern, or to preserve the original inline plantation effect. They concluded that 'the development of informality and diversity is directly in conflict with

the original design intent' and recommended 'that the original design intent be preserved as the objective of management'.

In 1984 the National Capital Development Commision announced that a ten-year landscape management programme for Haig Park would commence that year (*The Canberra Times* 24 March 1984). In summary, the programme envisaged the removal of 1200 of the 2000 existing trees in the park and replacement with 1200 young trees. The majority of removals and replacements would be with Monterey pine, *Pinus radiata.* A key point made to support the removal of so many trees was that the Monterey pines were declining. The objectives identified for the long term management of Haig Park were to: preserve the original design intent, ensure the ongoing health and vigour of the dominant long-lived species, preserve the existing landscape character provided by the formal rows of trees and preserve the role of Haig Park as a marker within the overall landscape as seen from the surrounding hills.

The tree removal and replacement programme stalled at the end of 1988 for financial reasons and did not recommence until 1993. The National Capital Development Commission had ceased to exist by then and responsibility for the Park rested with the ACT Government. The original number of Monterey pines was 1243. By 1984 this had been reduced to about 700 through natural death and drought. Between 1984 and 1993, 570 trees were removed as part of the regeneration programme.

The Monterey Pine removals were matched by replacement plantings spread over a similar period to the removals. In 2000 an assessment of the remaining 139 original trees was made and a programme recommended for their removal over the next 15-20 years. It is interesting that although it was thought in 1984 that all the pines were declining there were still 112 trees in 2000, which were assessed to have a useful life expectancy of five years or more.

The specifications for replanting in the early stages were rigorous and involved fencing, fertilising, watering and weed control. Superior genetic stock raised as cuttings by CSIRO were used with the aim of producing a better park tree than would be produced by using seedlings. The rationale for using superior genetic stock was discussed by Ken Eldridge. Most of the original trees planted in Haig Park expressed characteristics such as heavy forking typical of Australian radiata pine plantations before tree breeding started in the 1950s. Using seedling stock from these trees would be likely to produce trees with more forking and crooked stems than the parents 'because of one more generation of inbreeding' (Eldridge 1994). The decision to use clonal material of superior genetic stock resulted in a stand of

young trees of uniform growth which now require thinning. Gaining public acceptance of removal of young obviously healthy trees requires careful explanation.

Roman cypress plantation

Figure 2: Remains of a heritage plantation of Roman cypress at Green Hills, Canberra, burnt in a bushfire in December 2001.
Photo: Robert Boden

Christmas Eve and Christmas Day 2001 saw major bushfires entering the heart of Canberra. One fire came to within 100 metres of the Royal Australian Mint. A plantation of about 1000 Roman cypress trees (*Cupressus sempervirens* Stricta) was almost completely destroyed. It was the remnant of 9176 Roman cypress trees planted in 1919 by Thomas Charles Weston at the direction of Walter Burley Griffin. As far as is known the plantation had not been burnt before and the reduction from 9176 to about 1000 was due to drought and the Tuggeranong Parkway which cut a swathe through the plantation in the 1980s.

The plantation was one of six established on the hills around Canberra at the direct instigation of Walter Burley Griffin. Two of these in addition to

the Roman Cypress plantation were also partly burnt in the 2001 bushfires. The Roman cypress plantation has not been listed in any heritage citation and the reasons for its establishment are unclear. Gray (1999) put forward three possible explanations but found no records to confirm any of them. Ironically, the loss of the trees by bushfire was the catalyst for their sudden prominence in local media.

Discussion now focuses on future use of the land. Restore with Roman cypress or replant with other species, including eucalypts which would almost certainly have clothed the area before it was denuded of trees by European clearing for grazing and by rabbits. The area falls within the responsibility of the National Capital Authority who, at the time of the conference to which this paper was presented (February 2002), had not announced their plans for rehabilitating the area.

Epilogue

In February 2002 delegates to the Australian Forest History Conference were asked in for their views on species to replace the burnt Roman cypress plantation. Thirty-nine delegates responded. Twenty wanted the area replanted with Roman cypress to maintain continuity while two suggested replanting with a mix of eucalypts and Roman cypress. Five delegates suggested planting with *Callitris* which would provide a form similar to Roman cypress but is an Australian native species. (*Callitris* near the Roman cypress were also burnt in the fire). Ten delegates wished to see eucalypts replace the Roman cypress while one suggested planting with locally rare and threatened species. Finally, one optimistic delegate suggested planting with Wollemi pine!

In August 2002 the National Capital Authority announced that it would replant with Roman cypress and would seek to have the area heritage listed.

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25

Wombat Forest Society: tactics, talk, audits and action

Anitra Nelson

Introduction

This paper focuses on the Bullarto direct action that the Wombat Forest Society conducted in October 2000 and analyses the Society as an Australian example of community forest management. The Society was formed, in the mid 1990s, in Daylesford by community members already actively concerned with local forest management. By that time Victorian forests had become notorious as sites of an apparently intransigent contest between environmental and commercial interests. Despite this, the characteristic stance of the Society has been to encourage a full airing of interests by all the various stakeholders in open and respectful debates about contentious forest issues. Representatives of the Society have pressured forestry bureaucrats and politicians to release data related to forest management. At the same time they developed their own analyses and audits to monitor departmental practices.

The Society developed a distinct approach to campaigning for the sustainable management and use of Wombat State Forest: for strategic reasons the Society resisted blockading until the Bullarto direct action that involved a dispute over the forest reserved to protect an endangered powerful owl (*Ninox strenua*). This confrontation still involved well-established

Society protocols: frank talk, open negotiation and the determined resolution of a significant forest management issue.

In mid-October 2000, the Society announced a 'monitoring' action in a logging coupe in Osbornes Road, Bullarto. This direct action was called so that supporters could observe that loggers only moved already felled logs from a coupe that the Department of Natural Resources and the Environment (the Department) had contracted them to clearfell. It was the first time in its several year history that the Society had threatened to stop loggers at work. The issue was relatively straightforward: the Society claimed that the Department was logging in an area that ought to be conserved as habitat to protect the endangered powerful owl.

The Bullarto coupe had become contentious for conservationists and the Department when logging initially started in Autumn 2000. Consequently the Department pulled loggers out of the coupe, promising the Society that they would organise a workshop with departmental officials from the local regional office and headquarters and include Joanne Duncan, the local Member of Parliament, to analyse and discuss with members of the Society the logging plans for this Powerful Owl Management Area. At that time Tim Anderson, President of the Society, informed the logging contractors that his members were concerned that any further logging in the area would contravene management requirements prescribed in the Department's own *Midlands Forest Management Plan.*

Questions raised by the Society were still outstanding in mid-October when a press release from the office of the Minister for Environment and Conservation, Sherryl Garbutt MP, alerted the Society that loggers had recommenced extraction of wood from the Bullarto coupe. Tim Anderson contacted the Department prompting talks to analyse their concerns. According to Society representatives, the Department told the contractors that they had 'squared it off' with the Society. The Society found the Department's stance provocative and, if the Society's concerns proved correct, dangerous. Therefore the Society demanded a logging moratorium in the coupe unless and until a breach of the management requirements was ruled out.

This paper focuses on the political aspects of the Bullarto action, in particular the negotiating procedures followed by the Society with respect to industry and the Department. Therefore the analysis is partial in that it concentrates on the Society side of the story. Consequently it should be noted that, unless otherwise indicated, the information about the Bullarto direct action was based on interviews with Tim Anderson and Peter O'Mara on 22 October 2000, subsequent conversations with them during 2000 and

2001, as well as copies of emails sent between the Wombat Forest Society and the Department during October 2000. The specific interest here is the approach of the Society and the novel position adopted in the Bullarto action, both identified as developments in the evolution of community forest management processes in Australia.

Political context

When interviewed in early 2000, representatives from both the peak industry association, the Victorian Association of Forest Industries, and the Forestry Division of the Construction, Forestry, Mining and Energy Union nominated only one environmental group in Victoria whose tactics they respected and with whom they had constructive talks regarding forest management in the recent period. This was the Wombat Forest Society and both representatives singled out for mention its outspoken President, Tim Anderson.

The Society was formed in the mid-1990s in Daylesford by community members already actively concerned with local forest management. By that time the Victorian forests had already become sites of a seemingly intransigent contest between environmental and commercial interests. Despite such tensions, to the time of writing (early 2002) the Society has encouraged a full airing of interests by various stakeholders and insists on respect for all sides in open debates about contentious forest issues. The Society, whose hard-working members include Tim Anderson, John Endacott, Loris Duclos, and Peter O'Mara, has developed a distinct approach to campaigning for more sustainable management practices in state forests. Further, like other community forestry developments the world over, the Society stresses issues of social justice as well as environmental sustainability.

The Society has challenged political and bureaucratic agents and structures to involve more participatory processes of forest policy formation especially with respect to uses and practices in their local forest. They have developed sophisticated software to audit and monitor departmental practices involving predictions of timber volumes and have pressured forestry bureaucrats and politicians to release data related to forest management, especially details associated with 'sustainable yield(s)'. Using their critical analyses of local and state forest management they have confidently asserted their positions to a variety of specialists and authorities through direct communications, via the press and within public and informal processes provided for environmental discussion and activity. Using familiar arguments for public consultation and expectations of democratic procedures of governance, their activities have revealed the inadequacy of current

procedures for broad spread stakeholder participation in forest management, traditionally a relatively highly specialised and commercialised area of state concern.

The Society has always placed value on informal as well as formal dialogue with members of the timber industry. Some retired and active loggers, contractors and sawmillers have been outspoken in support of causes fought by the Society. This inclusive approach has had the effect of developing trust between distinct interests but not at the expense of robust and sometimes heated debate.

The Wombat State Forest is distinctive: it is small and compact, meaning that commercial and other activities in the forest are more obvious and intelligible in contrast, for instance, to the enormous and sparsely populated East Gippsland Forests. It was 'locked up' once before because of unsustainable timber harvesting activities. In 1898 the Wombat State Forest was closed to any more timber extraction for around half a century because, according to the Royal Commission (cited in Anderson 1999: 12), it had been 'ruined'.

As with many organisations, the activities of the Society have been dominated by several strong members. However, the Society has encouraged membership from a variety of interests, promoting themselves as a communal association. In early 2002 subscribed members totalled over a hundred. Working with industry to this extent, and taking into account community sensitivities regarding confrontational tactics, the Society strategically resisted the option of blockading until the Bullarto direct action. Indeed Tim Anderson had warned that he would stand with workers against conservationists if he judged their tactics to be unnecessarily confrontational and detrimental to the community base of the Society. The Society campaign has community sustainability as one of its objectives.

Not surprisingly other environmental groups have been suspicious of the Society's reluctance to blockade in forests. Blockading has become a common practice amongst Victorian forest activists. In fact permanent blockades have been set up at certain sites, like Goolengook in the State's far east. Many activists, deeply concerned at the rate of destruction caused by clearfelling, especially in intact native old growth forests, regard stopping current legal activity by direct action as critical. They have adopted and developed a series of non-violent techniques to interrupt logging activities and the removal of sawn timber from forests including: erecting tree platforms and pole sits, locking-on to machinery and trees, and surprising contractors as 'black wallabies'. In this context the stance of the Society was seen to be potentially undermining and dangerously conciliatory. In fact this

suspicion resulted in tensions within the Society membership early in its development and was a contributing factor in a major and ugly split in the group.

Today, early 2002, outspoken members of the Society are at pains to point out that the principle of only using direct action when all other non-violent avenues of appeal have failed has been successful strategically. Their approach has gained them respect and even support from forces with opposed interests as well as forest activists in resolving issues of forest management. Their use of direct action in the Bullarto case proves the strategic basis of this principle.

While the Society has conscientiously avoided violent confrontation, its members and supporters share a similar perspective with other forest activists and have struggled hard for the conservation of ecological values and sustainable forestry practices. To this end the Society has just as conscientiously developed a suite of techniques and protocol to negotiate for more participation in forest management and to clearly define common ground and the optimum policy and practical outcomes for the various stakeholders. Undoubtedly the initial 'no blockading' principle endeared the Society to the union and industry alike. However, this never compromised an acknowledged independence: the union representative, Michael O'Connor, said that his 'talks' with Tim usually took the form of heated 'screaming matches'.

The Society had intervened in decision-making processes and challenged political and bureaucratic agents and structures to be more transparent and accountable in a variety of ways. Their strategies had included setting up community forums to present and discuss different stakeholders' perspectives and various policy options and, in these forums, members encouraged appropriate protocols to ensure the 'safe' airing of contentious views and constructive discussion. The Society had petitioned bureaucrats, politicians, political parties and industry interests to make relevant information public. They devised their own auditing and monitoring procedures, both to 'keep the bastards honest' and to provide intelligence for the creation of alternative policies. They made elaborate submissions to government bodies involved with regulating and inquiring into forest use and practices and with forest and local development-related policy formation. They used the media in a constructive manner by releasing media statements that clearly stated and elaborated views held by the Society members by reference to other perspectives and they challenged the political, forestry and industry authorities to address their concerns by various means. During the Regional Forest Agreement process, the Society had initiated the West Victorian Forest Protection Network that has had the support of around 25 diverse regional

organisations concerned with forest management. It shares information and facilitates a common campaign approach. Also the Society has supported other local community actions in the vicinity of Wombat State Forest, encouraging the diverse local community to 'come with them' on their quest for sustainable forest outcomes.

The Society had developed out of a series of infrequent forums held, mainly in Daylesford, to air the diverse interests and to converse between numerous opinions about specific issues involving forest conservation and local economic development. The Society has an advantage over the sectoral focus that confines the Department's activity and authority mainly to the State Forest. As a wide-ranging community association the Society has more holistic perspectives, reflecting a broad range of local interests with a variety of visions for sustainable developments. It has been particularly concerned with ensuring that the water sourced in the forest, including mineral water recharge, is neither contaminated nor reduced by forestry activities. Also they have presented cases for entrepreneurs such as apiarists, and non-commercial groups such as field naturalists, whose interests compete with or are incompatible with timber harvesting and the regeneration systems followed in Wombat State Forest.

Obviously other forest activists also use the strategies listed above to present their cases and win support. However, to the extent that the Society has until recently refrained from blockading, it has had to develop and refine its powers of persuasion to a higher degree to gain the attention of and to engage in discussions and debate with industry and state foresters alike. In particular, Loris Duclos, along with Tim Anderson, has developed sophisticated means to interpret, check and challenge Departmental modelling and data. Alongside respect for on-the-ground local knowledge gathered by members scouring areas on foot and horseback and oral histories from old-timers, the Society has developed electronic means for summarising and cross-checking Departmental forward plans with actual forest practices and timber outcomes, like those associated with the Departmental Wood Utilisation Plans. These activities have considerably strengthened the political impact of the group. Their analyses (Wombat Forest Society Media Release 15 Dec 2000; Anderson in Wombat Forest Society Newsletter September 2001) have inspired front page articles in the Victorian daily, *The Age* (27 February 2001) and an *Age* editorial (2 March 2001) calling for state-wide reductions in logging volumes. Politicians and academics throughout Australia have solicited their advice on forest related issues (Wombat Forest Society Newsletter September 2001). Arguably, the most significant reasons

for their success as forest activists are their skills in research, community inclusion and advocacy.

Despite the dedication of the Society and the sophisticated techniques they have established in negotiating and resolving conflicts over forest management without blockading, in October 2000 a particular issue arose and the Society responded by threatening direct action. While introducing a familiar bottom line tactic, the confrontation still involved well-established Society protocols, such as frank and open negotiation towards a determined resolution of the issue at hand. The incident involved continuity for the Society as well as change. With respect to the introduction of, for them, a novel tactic, there was a sense of an ecological imperative to use this bolder instrument in their strategy to achieve success for their cause.

Ecological context: the powerful owl

The powerful owl (*Ninox strenua* of the Strigidae/Hawk owl family) is the largest owl (60-66 cm head to tail) found in Australia. It prefers to live in mature forests, where it preys at night on arboreal or semi-arboreal marsupials and nests in large tree hollows. In the last two hundred years, two-thirds of Victoria's forests have been cleared and the powerful owl population has diminished as its habitat has been lost and fragmented. Intensive forestry operations continue to disturb the habitat and prey of the powerful owl. Consequently it is listed as a threatened taxon in Schedule 2 of Victoria's *Flora and Fauna Guarantee Act* 1988. When listed, the Scientific Advisory Committee (1994) acknowledged that the species was at risk of extinction.

The Department's Flora and Fauna Guarantee program has a short-term (up to 10 years) conservation objective to protect 'good quality habitat for at least a population target of 500 breeding pairs of Powerful Owl...on public land in Victoria'. The long-term objective of the program is to encourage a larger population by preserving and restoring suitable habitat on land held under all tenures so as to 'return it to a secure conservation status in the wild'. In the Midlands Forest Management Area that includes Wombat State Forest there are over a quarter of a million hectares of potential habitat area for the powerful owl. The Department's *Powerful Owl Action Statement* (1999) nominated a target number of 25 breeding pairs protected by specially designated Powerful Owl Management Areas. These Areas were identified by the Department in areas of state forest of suitable habitat, particularly where powerful owls, their nests and/or roosts, are or have been recently known, heard or seen to exist. The *Midlands Forest Management Plan* (1996) laid down three specifications for them: they were to cover the forest within

a 3.5 kilometer radius of each recorded pairs; they were to have Special Protection Zones of at least 500 hectares managed almost purely for conservation values; and they were to have Special Management Zones of an additional 500 hectares containing trees at least 30 years old. In total over 25 000 hectares and over a fifth of the Midlands Forest Management Area is classified as Powerful Owl Management Areas, which are listed amongst the 'specific initiatives' for the conservation of biodiversity.

The *Powerful Owl Action Statement* identified timber production as the main interest conflicting with conservation of the bird's habitat in Victoria. The major harvesting and regeneration systems in the Midlands Forest Management Area had been clearfell, shelterwood and seed-tree silvicultural systems. This Area was covered by a *Midlands Forest Management Plan* (1996) that prioritised the different designated uses of forest and aimed to 'balance' industry and conservation interests. In the Foreword to that Plan, Michael Taylor points out:

> It provides a framework in which the region's timber industry can continue to confidently invest, and maintain employment opportunities in this important sector of the state economy. The Plan also provides a framework for protection of the natural values of the forest.

As with other Regional Forest Agreements between State and Commonwealth governments throughout Australia, the West Victoria Regional Forest Agreement covering the Midlands and including Wombat State Forest had the political and economic objectives of securing resources for the timber industry, symbolised in set sustainable yield figures, and conserving ecological values in forests. The Regional Forest Agreements have become notorious as critiques proliferate describing multi-dimensional failures to achieve 'balance' in the all too often conflicting objectives of respecting monetary and ecological values.

Despite being 'developed with extensive public consultation', the *Midlands Forest Management Plan* and West Victoria Regional Forest Agreement have been subject to various attacks, especially from conservationists but also from academics, since their inception (Endacott March 2000). Due to pressure from forest communities and activists, the Bracks Labor government Minister for Environment and Conservation, Sherryl Garbutt MP, made efforts to address obvious deficiencies in the public consultation process state wide. However forest conflicts have continued and even increased in open violence during her term (up until the time of writing in February 2002) along with charges that the change in State Government has failed to change the industry bias in the Department.

Given this highly charged political context, it is not surprising that the Department's publications had stressed that the advice and guidance of a community-based Forest Management Area Advisory Committee was sought in the development of the *Midlands Forest Management Plan.* Further, the summary of this plan referred to 'an orderly process for the review and refinement of forest management strategies and zones' (NRE 1996) that was partly to be realised in mid-2001 as the Midlands Regional Forest Reference Group. This was one of three groups instituted by the Minister but they were all disbanded in April 2002 (Garbutt 2002). Despite attempts to improve participatory processes in forest management, when the controversy over the Powerful Owl Management Area in Bullarto started in mid-2000, the Department's regional managers were responsible for coordinating implementation of the *Powerful Owl Action Statement.* The regional manager for the Midlands at that time was Andrew Maclean.

Bullarto direct action

Initially, the Department had pulled contracted logging crews out of the 30 hectare Bullarto coupe in autumn 2000, when the Society first raised concerns that the areas of Special Protection Zone and Special Management Zone contributing to the surrounding Powerful Owl Management Area (known as the Leitches Creek Powerful Owl Zone) were not sufficient to fulfil prescriptions laid down in the *Midlands Forest Management Plan.* At that time they agreed to clarify the facts and figures relevant to the area under contention before allowing further logging because the Society had estimated that around 80 per cent of the Powerful Owl Management Area had been logged within the last 25 years. At that stage, Joanne Duncan (the Member of Parliament for Gisborne) had been instrumental in mediating between the Society and the Department.

Several months later, mid-October, the Society found out that the logging contractor, Pritchards, had been sent back into the contentious coupe. The Society told the Department immediately that they would call a direct action in the forest until the matters related to the dimensions and quality of forest in the Powerful Owl Management Area were clarified. The Society also informed the logging contractors why they'd made this decision. A workshop to collectively analyse the conflicting evidence had been called by the Department but initially was not scheduled until the Tuesday (17 October) after the resumption of logging. The Society regarded this as an insult to both conservationists and industry. Talks with the contractors late in the second week of October, as they were on the verge of re-entering the coupe,

resulted in their voluntarily halting logging on the Monday (16 October) the day on which the Society hoped that they and the Department would resolve their differences.

At this point the Society went into high alert. Peter O'Mara set up a community forest meeting between members of the Society and Wendy Bone, a local specialist on the powerful owl. Information about the reasons for calling direct action was disseminated by word of mouth and by press releases in local papers.

On that Monday, while members and supporters of the Society kept vigil in the forest, a small delegation went to the Department in Daylesford in an effort to resolve the issues at stake. Three key members of staff were away from the office and those present weren't able to provide adequate records to confidently discuss, let alone resolve, the matter. The Department claimed that their analysis indicated that they could log another 290 hectares before failing to fulfil the *Midlands Forest Management Plan* requirements. However, Society logging history records and local on-ground knowledge suggested a quite different story. Two Society supporters, Gary McIntosh and Stuart Lee, had surveyed the contentious area on horseback and confirmed Society's suspicions that the Department had not allowed sufficient forest free from logging to fulfil the prescriptions laid down in their plan. Presumably, the vast difference in 'facts' added alarm to both sides. When the Society phoned the Department head-quarters in Melbourne, complaining about 'substandard data', they were given promises that adequate maps and personnel would appear the next day, Tuesday 17 October.

According to Peter O'Mara, he then visited the logging coupe to inform the logging team leader, Milan Mauric, of possible action. He negotiated a safe area for protesters and an agreement was made that Milan and Peter would remain in contact as the representatives of the two parties.

On Tuesday morning dozens of supporters of the Society met at Bullarto General Store (Daylesford/Trentham Roads) in response to a plea emailed the previous Sunday to gather for a monitoring action in the forest. A meeting with the Central Victorian Logging Company manager, John Slorach, and the media had been arranged as well. The media release that accompanied the call to action clearly stated the background and reasons for the monitoring action. In particular the Society expressed frustration at the Department for reinterpreting the meaning of '30 year old forest' contributing to the Powerful Owl Management Area, suggesting that they had altered a technicality to allow logging.

A shelterwood system of harvesting and regeneration had been introduced to the Wombat State Forest in the mid-1970s. This is a system of

cutting in two stages: in the first instance, around four-fifths of trees with trunks wider than 100 centimetres are cut. Subsequently, a controlled burn and seeds from the trees left contribute to regeneration. The coupe is cut again several years later. Early in the 1990s the shelterwood system moved from a low intensity to a high intensity system, with the operations being 'syndicated' for silvicultural reasons associated with encouraging messmate, *Eucaplyptus obliqua* (Anderson 1999: 15, 24). The visual patterns created by the stages of felling and regeneration reveal relatively accurate estimates of when areas have been last cut.

The Society claimed that the Department had ignored a less intense shelterwood harvest, incorrectly including it in their Powerful Owl Management Area. The Department claimed that their prescriptions included areas with as little as 50 per cent mature canopy. The Society expressed suspicion of the Department accusing officers of covering up and moving the goal posts in what they felt was a clear breach of scientifically determined requirements as stated in the *Midlands Forest Management Plan*. The Society President (Tim Anderson) was quoted in the media release, saying:

> This inadequate situation is a complete insult to the Wombat Forest Society's responsible campaign approach to local forest issues and we are now faced with the prospect of our first direct action against local workers... The Wombat Forest Society is asking that DNRE immediately endorse a logging moratorium in the Bullarto coupe until we all sit down and work through the management requirements. For too long, the decisions over contentious issues have been given inadequate community input resulting in logging taking precedence over the environment.

Around 50 supporters of the Society went into the forest on Tuesday, 17 October. Peter O'Mara had informed the police that the Society planned a direct action at the coupe in an effort to resolve a conservation issue of great significance. Peter remembers meeting with a police constable and Milan on site to agree on protocol. The Society acknowledged that the contractors had already wasted valuable work time in their original conciliatory gesture to refrain from working on the Monday, but the dispute remained. Given that there were already felled logs still lying uncollected on the forest floor, the Society had decided to 'allow' the loggers to collect timber that had been felled previously in the autumn while they kept observers present to make sure there was no more harvesting. Under the circumstances this 'resort to direct action' was legitimate according to Tim Anderson: 'At some point we have to draw a line in the sand; this looks like it.'

In at the Daylesford office of the Department on that Tuesday representatives of the Society, Tim Anderson and Gary McIntosh, and Department officers pored over maps and added the new figures together. The revised count had the Department 290 hectare buffer zone reduced to 57 hectares. This did not surprise the Society. They believed such a close call lent support for their caution. While questions still remained over certain aspects of this new figure, Society members were eager to resolve the matter completely before the contractors were allowed to resume logging. Tim Anderson kept in contact with Peter O'Mara, with the protesters in the forest, by mobile phone. At the end of the day the Department required more information to be couriered from headquarters for consultations starting 9 a.m. on Wednesday, 18 October.

Back at the coupe that Tuesday, the contractors' patience had worn thin. The syndicate manager explained to the protesters that they intended to lay civil charges on anyone who disrupted them resuming their logging. They were wasting time and money. The contractors estimated that it would take them at least a day to clear up to 2 hectares of forest.

The Department had already arrived and offended the Society by writing down the licence numbers of their cars. In response, Peter O'Mara who had previously liaised with local police officers, gained the protesters' permission to disclose their names in an effort to minimise intimidation. The Department backed up the contractor's threats, informing the protesters of new state legislation and procedures that might make them liable to compensate the logging crew for loss of income if it could be proved that legitimate work had been obstructed. Given the extent of forest actions throughout Victoria it was ironic that a group so traditionally opposed to direct action faced some of the initial impacts of laws devised to contain more obstructionist elements. Indeed the Society voiced the concern that the Department 'had set this up to be the first test of this legislation'.

When Tim Anderson and Gary McIntosh returned, all parties to the dispute, including the loggers and police were invited to a summary update of the day's discussions between the Society and the Department at the Daylesford office. While previous discussions amongst the forest-based protesters had been public to the contractors, the Society now discussed their options in private from the contractors but openly amongst themselves. The resumption of logging against their wishes was not just provocative but explicitly involved the threat of protracted and expensive court proceedings so members needed to think through their individual as well as collective response.

At the end of these private discussions, the Society announced to the contractors and the Department that they expected that any court defence would attract free and expert legal support for their case as well as valuable media coverage for their cause. However, this cause for the protection of the habitat of the powerful owl would be lost if the loggers obeyed the Department's instructions and no court case after that fact would return the lost vegetation. This ecological imperative drove the strategy of the Society. As a compromise, they negotiated with Pritchards Logging to support the Society's case (if and once proved) by refraining from logging elsewhere in the Powerful Owl Management Area in order to compensate any loss due to the loggers' activities in the here and now. This shifted pressure back to the negotiating skills of the Society, to bring the Department to the table and expeditiously prove their case so that the Department would be forced to withdraw the logging crew they had contracted in the contentious Bullarto coupe.

Meanwhile, back at the teepee

After local horse riders had surveyed the Powerful Owl Management Area again, members of the Society were very confident of their case. Having been thwarted in the forest, they brought their protest to the streets of Daylesford. On the Wednesday morning they had local supporter Dave Stephens set up a teepee (a tent) outside the local Department office. This 'Wombat Forest Embassy'—also referred to as the 'Community Forest Embassy'—was decorated with a banner featuring the Society's cause. Emails to supporters the night before had advertised an occupation of the Department with a barbecue, music, and revelry in an effort to be heard in a more public forum. A report that started on page one of *The Advocate* (#10428: 1,3) that day featured the headline: 'Trees to go in department's about-face'.

According to the Society, the Department staff seemed overwhelmed by the persistence of the Society's supporters who filled the small front office of the Department in Daylesford that Wednesday morning. However, rather than invite them all into a large back room, the Department asked to negotiate alone with a few representatives. Society members have always argued for a transparent and all-inclusive approach to discussion and decision-making both within the association and in dealings with third parties. In keeping with established protocols, Tim Anderson suggested that all the Society members attend the negotiations with Department officials, in turn, as short-term observers. This spectrum of the local community included a

mother and young child. Tim wanted them all to witness personally the intensity of the meeting and believed it would be empowering for them to go beyond protesting in the field and see for themselves the bureaucratic aspect of the campaign.

The teepee now came into its own as a practical space for sheltering and catering for Society supporters and acting as a distribution point for locals interested in keeping abreast with the latest in the negotiations. Finally, after reaching a mutually agreed upon position in the office, Department officials took off their shoes and entered the teepee to address the congregated community with that position. Pete O'Mara ventured:

> It was more of a lighthearted approach than one that was meant to mock people. In fact they gained great credibility by coming into our tent. (Interview 21 October 2000)

In the teepee, the Department's regional manager Andrew Maclean stated that records derived from Victoria's Statewide Forest Resource Inventory still suggested a small buffer between the logged areas and the prescriptions laid down in the *Midlands Forest Management Plan.* (Victoria's Statewide Forest Resource Inventory is an impressive work in progress that includes, for instance, 1:25 000 scale maps of forest stage, structure and age, showing the incidence of eucalypts.) Maclean suggested to the community audience that, given such a close call, a total moratorium on any more logging in the Powerful Owl Management Area for the next ten years was a compromise he was prepared to make. This meant that Pritchards would complete logging in the Bullarto coupe but that two other partially cut coupes in the vicinity would be left alone.

Beyond the teepee

To key members of the Society, who now renewed their efforts to determine the facts on the ground in the forest, Andrew Maclean's proclamation seemed a messy, inconclusive 'resolution'. If the Department had been so sure of their facts, there was no reason at all for them to give ground to the Society. Further, Tim Anderson received an email from Andrew Maclean on late Wednesday 18 October that gave him the impression that the Department were backing out of the just announced deal. In that email, Maclean talked about a second shelterwood cut within 10 years and 'the possibility that the whole approach to owl conservation might be reviewed and changed in the next 10 years'.

Despite this apparent back-off, on Friday 20 October the Society released a media statement thanking Department staff and the loggers for the 'generally amicable way' that they had dealt with 'this tense situation'. At the same time the Society voiced concerns about the Department's inadequate staffing, services and resources that had at least contributed to, if not caused, the conflict: 'Clearly a system is needed that acknowledges and resolves these issues before contractors are put in the coupe'.

On the same day Tim Anderson replied to Andrew Maclean's email, saying that any renegotiation of the 'agreement' would require reconvening some two hundred interested community members, requiring 'a really, really big teepee'. Besides that, the Society had become more confident and precise with their figures. Another, just completed, reconnaissance of the area seemed to prove that the Department were already logging several hectares into the Powerful Owl Management Area. Tim was adamant: 'The numbers fall our way.' He wanted official confirmation of the ten-year moratorium as agreed in the Wombat/Community Forest Embassy on the Wednesday or, he said, they would go back in and blockade the Bullarto coupe.

Not having heard any confirmation from Andrew Maclean, early the next week Tim Anderson again emailed him, sending a copy to a state wide forest management divisional head, Ian Miles, and went a few steps further. He notified the Department that without written confirmation of the deal made in the Wombat Forest Embassy teepee, the Society intended to make formal complaints to the Federal Government about the Department breaching the requirements for Ecologically Sustainable Forest Management (stated in the West Victoria Regional Forest Agreement) which, it was suggested, was partly due to the inadequacy of the Department's audits. They also threatened to complain to the State Ombudsman, and the Victorian Civil Appeals Tribunal. Anderson asked the Department to pull the loggers out immediately and leave the resolution of the conflict to the Midlands Regional Forest Reference Group (that was not, in the event, convened until mid-2001): 'No more phone calls, a clear written position is what we need.'

Horseback surveyor, Gary McIntosh, emailed Andrew Maclean on Tuesday 24 October with Society figures and analysis of the contentious Powerful Owl Management Area, attaching maps and other details indicating that the Department might have already contravened their own prescriptions by 52 hectares. He added that, as a member of a family that had been involved in the timber industry and sawmilling for generations, his concerns focused on 'a more sustainable level' of timber yields from the forest. He emphasised that he did not want to lock up the forest from harvesting. The Society and their followers in the local community simply wanted the

Department kept to its documented word on prescriptions for the Powerful Owl Management Area. Gary followed this up with another email on Thursday, 26 October, anxiously asking for some response 'ASAP'. In the event, Tim Anderson spent that night in a 'forest modelling forum' with Andrew Maclean, John Storach (Central Victorian Logging Co.), Graeme Harding (sawmiller/timber merchant) and Geoff Proctor (Black Forest Timbers). The result was clear in his posting on the VicForests e-group, Friday, 27 October: 'they are pulling out loggers today...'

It has been pointed out by member, John Endacott ('Comments', 12 December 2001), that this was a hollow victory for the Society given that it coincided with 'a tragic irony', the end of Pritchards Logging:

> ...they are nice people, and we regard them as honest and respectable forest contractors; yet it is they who have retired from the Timber Industry as a result of the post-RFA re-structuring due to resource failure, and the stresses of the final phase of unavoidable protest action. This is truly regrettable and causes me a lot of anguish.

The contractor applied for an RFA exit package and left the industry altogether. The Bullarto action involved the fourth coupe in succession that Pritchards had been moved from or had associated troubles working in. Tim Anderson pointed out that: 'The contractor seems to be the underling in all this as well.'

Politics of the present

The Society was still threatening legal action in early 2001 and subsequently complained to the Commonwealth alleging a breach of requirements of Ecologically Sustainable Forest Management expected of the Department under the terms of the West Victoria Regional Forest Agreement. However, the auditing procedures pioneered by the Society gained more attention in the year after the Bullarto action. So much so that in Spring 2001 Joanne Duncan (Member of Parliament for Gisborne) invited Tim Anderson, Peter O'Mara and Loris Duclos to meet with the Premier, Steve Bracks, the Minister for Conservation and Environment, Sherryl Garbutt, and senior staff from the Department to discuss questions surrounding sustainable yield figures not just for Wombat State Forest but for the rest of the State as well. As a result, the Premier granted the Society access to Department data. However, the Society continued to campaign for an Auditor-General's inquiry into the Department's management of the forests and to push for

sustainable management for all forests in Victoria, including the Wombat State Forest.

Meanwhile, as mentioned above, the Midlands Regional Forest Reference Group (Wombat Forest Society Newsletter, September 2001:11) failed to come to a consensus on the first issue they considered. In reference to community pressure to protect a powerful owl located near Trentham, by stopping logging in Hilltops Coupe (Lyonville), the Department presented the group with, in Tim Anderson's words, 'a type of "catch 22" scenario'. The issue focused on the inadequacy of forest around Trentham to fulfil *Midlands Forest Management Plan* prescriptions for Powerful Owl Management Areas. Instead of making an exception for the habitat supporting this particular powerful owl, the Department framed the community's options in this way: either you don't worry about conserving the forest in the immediate vicinity of the Trentham powerful owl or, if you are willing to accept sub-standard conservation measures for this particular owl, we will view that as a precedent for application across the entire Forest Management Area.

Given these limited alternatives, the Reference Group was unlikely to opt for saving the Trentham powerful owl. Indeed, after much discussion at a meeting that Tim Anderson did not attend, they voted not to compromise the futures of all the other powerful owls in the region. However, just as predictably, representatives from the two associations of forest activists most closely involved with campaigning against logging in the vicinity of the Trentham powerful owl (Actively Conserving Trentham, and the Cobaw and Wombat Forest Action Group) resigned as members of the Reference Group as a consequence of the decision. Tim Anderson publicly sympathised with and supported the position of the members of the two associations but stated, in his President's Report to the Society Annual General Meeting (October 2001), that he himself would remain a member 'to make the Reference Group act fully within its brief and properly reflect the failures of the Department to make balanced decisions'. Tim (Wombat Forest Society Newsletter, September 2001:12) had decided to remain involved unless compromised in some vital way. He judged the formation of the Reference Group: 'a great step towards a better input into the immediate running and management of our forests'. Further:

> While there may be an agenda by some to see this group as a 'rubber stamping' exercise by parts of NRE [the Department of Natural Resources and Environment] and the timber industry, it will be what we make of it.

However, it seems clear that the Department maintained the upper hand with respect to the Trentham powerful owl. Yet, even if the Department's way of framing the alternatives appeared bloody minded, it is important to point out that the Department's policy documents lend a limited credence to their approach. Indeed, according to the Powerful Owl Action Statement, less priority is given to protecting powerful owls found in sub-standard habitats. However, the option of diminishing standards for the powerful owl right across the Forest Management Area flies in the face of both the intent and word of this same document that is the primary guide for the activities of the Department with respect to the endangered species. Still the Department's framing of the question dictated the Reference Group's discussion and decision.

The predictable inability of the community to come to a consensus and in fact to split apart on this issue suggested that the structure and processes of the Reference Group were not sufficient to improve community participation in forest management. As John Endacott (12 December 2001) pointed out:

> The Reference Group is just another committee, with no legislative power whatsoever. It can only consider issues and offer advice to the Minister and her Department, who are under no obligation to accept or act on the group's advice.

The Reference Group seemed to be more of an under-representative 'talkfest' than a substantial contributor to decision-making, a new card in the players' hands rather than a new rule that would alter the game altogether. As mentioned earlier, the three Reference Groups were disbanded in April 2002.

The struggle for community participation continues and it is as complex as it is multi-dimensional, not just because the local fight has global implications and because community forestry is in its infancy, but also because 'sustainability' is both an ecological and social challenge. Technologies like email, access to information and discussion via the internet and mobile phones facilitate community management. At the time of writing (early 2002), the Society continues to emphasise personal as well as collective empowerment and encourages co-operation as well as community education.

At the same time as deepening research and advocacy locally, the Society has strengthened its participation in debates and structures at a state wide and nation-wide level. For instance the Society co-hosted (with the Native Forest Network) the 18th National Forest Summit held 27–29 April 2001 in Hepburn Springs. Also, prominent Society activist, Loris Duclos, continues

to intervene in discussion surrounding the pros and cons of plantations in an innovative way by promoting restoration forestry. Similarly, the Society has had substantial input into the development of a Victorian plantation management position statement, which has the critical support of most relevant forestry conservation groups in Victoria. Finally, the Society had pressed for forestry reforms of the kind announced by the ALP government in February 2002 (Bracks and Garbutt 2002). These included reducing sustainable yield figures by almost one third State-wide and separating commercial forestry from the rest of the Department that was responsible for the conservation of the State's forests.

Conclusion

Worldwide, communities are seeking to resolve issues associated with unsustainable industrial and social practices. Not only are they pressing for new policies and programs and even new political parties, for instance the Greens, but also for new processes and structures for governance. Using familiar arguments for public consultation and expectations of democratic procedures of governance, the activities of the Society have revealed the inadequacy of current procedures for public participation in the traditionally specialised and commercialised area of forest management. Many Society activities have focused on the importance of transparency, openness and accountability with respect to the political, industrial, technical and bureaucratic aspects of forest management.

The research (analyses, monitoring and auditing) and advocacy skills of the Society seem to be the primary reasons for their success as forest activists. The Society offers a constructive model for a deepening of democratic processes in a society with complex and urgent problems associated with ecological and social sustainability. Given the immediacy of these problems for communities nation-wide, such processes are unlikely to unfold as incremental reforms. Nor, as the recent incident in Bullarto seems to prove, is it likely that they will occur without at least the threat of force from communities faced with the combined political and economic authorities of industry and State.

Specifically because of the inadequacy of current procedures, models of community forest management, like the Society, necessarily experiment with techniques for intervening in decision making as well as contributing to public participation in policy-making processes. This is partly because ecological expedients mean that if certain actions are not stopped (in legal or illegal ways) we will limit our future options. The complexity of social as well

as ecological aspects of sustainability has complicated state governance, especially in association with bureaucracies like the Department, that have become dominated by commercial forestry interests and highly specialised environmental scientists rather than by integrating the wide range of community concerns especially with non-wood forest values.

The predicament of the Wombat Forest Society described here is typical of the circumstances in many Victorian forests. It indicates that forestry departments and bureaucrats—who in the past have relied much more on specialised environmental advice and the more readily satisfiable demands from the timber industry—will need to create new procedures for collecting and analysing information and integrating the community into their decision-making. Further, in as much as forest management issues are complicated by ecological time bombs, symbolised by species threatened with extinction like the powerful owl, developments to deepen democratic processes are urgently required.

Note

Most of the information in this work derives from a series of interviews—conducted by the author and a research assistant, Elle Morrell, during 1999 and 2000—with various stakeholders in forestry activities in Victoria and formed part of a larger project. The interviews relevant to this paper included those with: Graeme Gooding (Director, Victorian Associated Forest Industries); Michael O'Connor (Representative, Forestry Division of the Construction, Forestry, Mining and Energy Union); Peter O'Mara (Wombat Forest Society); John Endacott (Wombat Forest Society); Graeme Harding (local sawmiller); Gary McIntosh (Wombat Forest Society); Loris Duclos (Wombat Forest Society); and Tim Anderson (Wombat Forest Society). Excerpts from these interviews are published with their consent. Other interviewees relevant to this project asked to remain anonymous. Reference was made to other material sourced in the Wombat Forest Society archives too, including: emails, media releases, newspaper articles, letters, submissions, maps, pamphlets, kits, and reports.

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Beyond Australia

26

Thinking about New Zealand's forests, 1900–1914

Paul Star

> It is no easy work to weave the souls of men into their surroundings
> (Rudyard Kipling, 1891).[1]

Introduction

The conservation by Europeans of New Zealand's native forests began in the nineteenth century. It assumed their continuing use, both as a timber source and as a safeguard against desiccation—the 'drying up' of the environment. With the twentieth century, other reasons for forest protection became clear. These had more to do with beauty and sentiment than with economics, and they paved the way for recognition of 'the bush' as a major component in the country's identity. After about 1910, New Zealand seemed bound upon a course that increasingly dismissed the use-oriented conservation of native forests, and thought instead of their complete preservation.

These words, 'preservation' and 'conservation', are often used as though they mean the same thing. Here, however, preservation implies the protection of indigenous ecosystems from any direct use, whether 'harvesting' limited numbers of native birds or animals or (in the case of forests) felling individual trees for timber. This contrasts with a conservation

that encourages the 'wise use' or 'sustainable management' of protected indigenous ecosystems.

In most western countries, preservation and conservation exist side by side. Indigenous species of trees are grown for timber. While particular sites and specific trees are totally protected, Britain uses its oak and Canada uses its pine. In Australia, protection concentrates on old growth native forest, often with a complete ban on logging. But many native eucalyptus forests are sustainably managed for production, while plantations may be either of exotics (like radiata pine, a Californian species) or commercial indigenous species (such as hoop pine).

The situation in New Zealand is different. While production, sustainable or not, from native forest has never completely ceased (particularly on private land) the ideal for many environmentalists would be the preservation of all remaining natural indigenous forests. Recent governments have imposed an almost complete ban on the logging of native trees on publicly-owned land. The present government has halted the last experiments by a State-owned enterprise, Timberlands, to sustainably manage rimu and native beech forests. Timber plantations are now almost exclusively of exotics (with a strong preference for radiata) and since 1999 there has been no government research into the planting or utilisation of native timbers. Thus, while forestry is encouraged as an industry, it only involves species just as foreign to indigenous ecosystems as are sheep and wheat.[2]

By looking at what New Zealanders thought about their forests a century ago, we can begin to understand how this situation arose.

Removal and protection of native forest

As part of a continuing process by British settlers, 35 million of New Zealand's 66 million acres (14.5 million of over 27 million hectares) were officially 'in occupation' by 1900, and over 40 million acres (16.5 million hectares) by 1910. These acres answered to the needs of Western agriculture or pastoralism. They produced crops, or grew largely introduced grasses for consumption by sheep (over 20 million of them) and other stock.[3]

Turning New Zealand's land to this kind of production was a fundamental objective of European settlement and a measure of progress. But correspondingly, as the area in occupation increased, the area of unoccupied land, with its indigenous vegetation cover, decreased. The area in forest fell from 22 million acres (9 million hectares) in 1886 to 17 million acres (less than 7 million hectares) in 1909.

Some continued to believe that the removal of all bush was inevitable. The Commissioner of Trade and Customs, felt that 'as settlement progresses it is simply impossible to keep any small sections of it [the bush]—sawmilling and settlement must go hand in hand'. It was 'no use trying to conserve the colonial timber' since, 'like coal in the earth—it was there to be used'.[4]

The Bush and Swamp Crown Lands Settlement Bill of 1903, precipitated by the wish to settle returning soldiers from the South African War, reflected the still dominant attitude to 'unoccupied' land. 'What is the use of all these millions of acres', one politician wondered, 'unless something is done to make them produce wealth, to make the grass grow, so as to carry sheep and cattle?' The Bill encouraged settlers to 'improve' such land by foregoing rates for the first four years on bush lands (as long as burning and clearing took place), for three years on swamp, and for two years on scrub.[5]

But the process of transformation had reached the point at which native forest in some areas appeared scarce.[6] Insofar as any asset, when it becomes scarce, increases in value, it is not surprising that attempts to define and protect the more precious pieces of the indigenous remnant took off precisely when tremendous energy was spent in removing whatever was not protected. Against the background of an 'urge to clear the bush' there had grown the urge to save it. By 1909, 2 million acres (800 000 hectares) had been classed as 'permanent forest' that was definitely not to be used. This included, in particular, three new kinds of reserve that had emerged in the 1890s.

First, there were large national parks. The creation of Tongariro National Park in 1894, together with later legislation for other areas, has been linked to a national park 'movement' which began in the United States. This kind of activity continued. In 1902, for instance, Thomas Mackenzie successfully lobbied government to make a 'public park' in Fiordland.[7]

Second, island sanctuaries were created from 1892 onwards, at Resolution Island, Little Barrier Island, and then Kapiti.[8] This was a uniquely New Zealand response to growing international awareness that native fauna and flora needed protection. Here again, reservation occurred on the margins, where agriculture and pastoralism were not a major concern.

Third, a simultaneous movement sought to reserve remaining small areas of bush close to population centres. This *did* conflict with settlement. While smaller-scale land reservation occurred earlier, notably through the *Land Act 1892*, only the *Scenery Preservation Act 1903* was specifically designed both to protect areas from settlement and to advance goals other than the satisfaction of settlers' material needs. By 1907, the Department of Lands

audaciously claimed that 'the scenic attractions of New Zealand have not been allowed to be destroyed ... but will be preserved intact for all time as the patrimony of the people'.[9]

Economic reasons for protecting native forest

I must stress that some of New Zealand's forests had been set aside, even in the *earliest* days of European settlement, but mostly with a view to their later exploitation. At first, reserves had been created simply as wood lots, on the British model, to meet the continuing needs of settlers for firewood, timber, or grazing, but there was also a growing awareness that native timber was being squandered. The case was then made for a wider and more careful reservation of the bush as a valuable asset, a future source of timber. This was the principal motivation for the forests acts of 1874 and 1885.[10]

When he summarised the reasons for forest conservation in 1908, the Government Forester H.J. Matthews still made much of this 'industrial' motive, the need to produce 'enough millable timber to meet the continuous and growing requirements of the building and allied trades'. He also provided the 'climatic' reason, familiar since at least the 1860s, that removal of too much forest would 'reduce the present water-holding power of the land'. He added that forest limited 'soil-denudation'.[11]

The case for the forests was widely heard. The Legislative Council even refrained from sitting on Arbor Day, 'to impress upon the rising generation the great desirability of tree-planting ... [and] forest conservation'. By 1913, the Day's planting programme had become an attempt 'to save the country from the shame of its own nakedness'.[12] The emphasis on Arbor Day, however, hints at the fragile nature of the argument for native forest, since if the remaining area of bush was insufficient, the need for timber or for climate control might equally be answered by the planting of new trees, preferably exotics. As these grew up, the bush could still come down.

Matthews only considered it 'imperative to restrict the present indiscriminate sawmilling of all available forest to such moderate extent as will insure their gradual disappearance synchronous with the development and growth of the State plantations, so that as the one fails the other may take its place'.[13] The State Nurseries and Plantation Branch of the Department of Lands, established by him in 1896, planted 15 million trees in its first ten years. The vast majority were exotics, though it was by no means clear at the time that radiata pine would become dominant. Only modest numbers of native trees were planted, but this did not imply a comparable dismissal of them as a future timber source. On the contrary, it

demonstrated a belief that maintenance of the native timber supply was more a matter for nature than for humans. The forests would regenerate by themselves.[14]

1913 Forestry Commission and native forest

The 1911 report on state afforestation marked a change in attitude, for it emphasised reasons *against* indigenous reforestation. Native trees, it said, took 'an inordinate length of time to grow' and you could 'raise on average three to five crops of larch or pine during the same time'. Furthermore, 'being surface-rooters, their adaptation for general afforestation in open lands is practically prohibited through the damaging effects of exposure to sun and wind'. But perhaps the most compelling factor remained that 'some of the most fertile and productive soil and country in the Dominion was to be found in those very forests that contained the most valuable timber'. This made it 'as difficult a matter to preserve these magnificent forests ... as it would have been to have prohibited ... the onward march of civilization'.[15]

These statements prefigured those in the more wide-ranging Forestry Commission report of 1913. New Zealand at the time was particularly concerned with development and population increase, impressed both by extrapolations into the future which suggested an incipient timber famine and by the evidence of a rival nation (Germany) outdistancing Britain and her Empire in the application of science to industry, including the timber industry. The commissioners were therefore powerfully attracted to trees that would yield timber rapidly. They paid particular attention to a forty-year old plantation of both exotics and natives in Thames. These specimens served 'to illustrate the rate of growth of some exotic trees in comparison with our own native forest-trees' and revealed 'the utter absurdity of suggesting such a tree as the totara for afforestation purposes'.[16]

At the same time the botanist Thomas Cheeseman found that 'although the kauri', the most highly valued of New Zealand's timbers, 'is not so excessively slow in growth as has been supposed, it is much slower than most trees of economic value' and would not 'offer any hope of monetary return'.[17]

In New Zealand, the 1913 report stated, and in contrast to the situation elsewhere, 'the natural forests belong, with perhaps one exception, to a class which cannot regenerate sufficiently quickly to allow them to be kept as permanent forests yielding a succession of crops'.[18] Such an incisive and influential dismissal of the forestry potential of indigenous species led to massive plantation of exotics rather than of natives.

Two caveats must be noted. First, the Commission still saw a future in production from the beech forests of the South Island, which were 'the only ones amongst those indigenous to New Zealand which may regenerate rapidly enough to warrant their permanent retention'.[19] Second, the Commission accepted a continuing function for native forest in climatic control, and recommended new climatic reserves of almost two million acres.

Further reasons for protecting native forest

In 1993, eighty years after the Forestry Commission report, there were still over 15 million acres (6.2 million hectares), or 23 per cent of New Zealand's total area, in native forest.[20] If timber production and climate control had been the only considerations, far less forest would have survived. But there were other reasons for keeping it, which had gained increasing potency in the decade or two *before* 1913. Bringing these into the picture, we can see that the 1913 report condemned native forest not to destruction but to non-production status.

Until this time, the conservationist trend had been towards indigenous production and integration with exotic production and exotic methods. This was the vision behind the *Forests Act 1874* and later legislation, but in 1913 scientific opinion very seriously eroded that vision. Instead, New Zealand was encouraged along a particular preservationist path, which separated off many (but never all) indigenous environments, isolating them from the main thrust of society, which was towards total land transformation for agricultural production.

Native forest was preserved for a new set of reasons, distinct from those that had seen it conserved. First, bush was found beautiful. Many European settlers had always felt as much, but beauty was only acknowledged as an argument for protection as the area in forest diminished. J.P. Grossman in 1909 acknowledged the influence of 'sensitive and aesthetically-minded folk [who] have thought of the bush as a highly picturesque asset among our manifold scenic attractions, and ... deplored its disappearance chiefly because it means the destruction of national beauty, which can never be restored'.[21]

Second, some reasoned that, because it was beautiful, native forest would create income by attracting tourists. When Thomas Donne, who was in charge of the Department of Tourist and Health Resorts from its inception in 1901, argued for the retention of forest beside the Main Trunk line from Wellington to Auckland he claimed that its 'primeval beauty' would 'afford a

great attraction to travellers ... whereas miles of burnt and blackened logs would prove a weariness to the spirit'.[22]

Third, the scientific arguments for valuing native forest became more sophisticated. Between 1907 and 1909, the Government commissioned Leonard Cockayne to make botanical surveys of several key areas being considered for protection.[23] His influential written reports provided a rationale for preservation which reached its logical climax in his 1908 survey of Tongariro, when he maintained that the operative factors in creating scenic worth were botanical. He said that:

> Scenery...does not depend merely upon geological or geographical characteristics, but upon the plant covering of the place in question. Therefore the more special the vegetation the more distinctive the scenery. And nowhere does this dictum carry more weight than in New Zealand, where the vegetation is unique.

This argument justified the extension of Tongariro National Park into forested areas at lower altitude.[24]

Here was scientific validation for the feeling that the bush, not the mountains, made New Zealand special. European New Zealanders only developed this idea as they became *less* European. When the premier, Richard Seddon, introduced the Scenery Preservation Bill in 1903 he argued that already New Zealand 'had in Mount Cook, Mount Egmont, and our various lakes and rivers wonderful natural scenery; but more than that was needed'. He reasoned that 'the beautiful bush scenery...gave these places their most potent attractions'.[25] Protection therefore should extend beyond the mountain peaks and the expanses of water, whose preservation had been more in line with European perceptions of beauty.

Seddon remarked that 'the last time I went through the Buller Gorge and saw the destruction of timber that has taken place...I realised that one must not trust to providence altogether in these matters'. This directly paralleled the personal experience of the destruction of South Island bush by an earlier prime minister, Julius Vogel, which led him to champion the Forests Bill of 1874. But where, at that time, the appeal was primarily to the conservation of forest for its timber potential, in 1903 the main arguments were, specifically, sentiment and the beauty of the bush. In a magisterial put-down of a parliamentarian who opposed expenditure on scenery preservation, Seddon damned him as 'unsentimental' and with 'no aspirations beyond that of a milk-pail'.[26]

Native forest and national identity

From parliamentary debates at this time, it is clear that Seddon and others had begun to associate native forest with New Zealand's identity. W.H. Field gave an early nationalistic slant to preservation, maintaining that 'trees planted in the colony cannot have the same interest, particularly to New-Zealanders, as our native forests', and Charles Bowen observed that 'the New Zealand forest looks best when no foreign element intrudes'.[27]

In 1913 George Witty thought people should be 'more patriotic' than to destroy reserved bush. The new feeling was summed up when Cockayne asked Harry Ell, a politician committed to preservation, whether areas of rare native flora should be 'fenced off and declared sacred'. Ell assured him they should, declaring that 'the time will come when people will not smile at these proposals, but a truly national sentiment in regard to them will be evoked'. Cockayne's own promotion of floral sanctuaries had an almost religious aspect to it. These reserves should be 'kept sacred' and 'religiously guarded'.[28]

Rise of preservation

The new reasons for forest and scenic reserves concerned tourism, national significance, beauty, sentiment, science, and climate. These are the factors we see crowding in during the 1900s. Crucially (and with the partial exception of tourism) these rationales required that the bush be not modified, but, rather, preserved as it was, to retain its value. The new emphasis was different from the way conservation had been promoted in the 1860s and 1870s.

I do not mean to suggest complete polarity, from the 1900s, between preservation of remnant native forest on the one hand and transformation for production and use of all other areas. In addition to native beech production, the Director of Forests still saw some place for sustainable production of rimu and kauri in 1939.[29] Partially modified bush remained a feature of domains, and in botanic gardens native trees were introduced into otherwise totally modified and exoticised planted areas. Native tussock, an indigenous ecosystem, continued to be managed as pasture for sheep and cattle, and there remained the perennial hope of a sustainable industry based on native flax.[30]

The emphasis on preservation, however, did lead New Zealand in a new direction, away from the kind of blending which was earlier imagined and, in some cases, fulfilled. It was also distinctly different from proposals put

forward by Donne of the Tourism Department to combine the best natural attractions of 'Home' and colony. To him, introduced deer represented the perfect compliment to New Zealand's scenic delights. They would provide sport for rich tourists and yield a profit from lands that failed to produce an income in other ways.[31]

Donne's vision was of a utilised indigenous remnant, complying with European ideals of what constituted beauty, and of the uses to which beauty could be put. But deer proved a far more controversial drawcard than the trout he similarly promoted. Harry Ell was 'not in favour of turning animals into our State forests for those people to come here and shoot', since they damaged the undercover, affecting not only indigenous vegetation but also water conservation. Leonard Cockayne also explicitly stated that the introduction of exotic game into reserves was incompatible with the role of reserves as sanctuaries of native flora and fauna.[32]

Conclusion

The First World War, so evidently a 'great divide', has taken attention away from this promotion of the indigenous remnant in the immediate pre-War period. Before 1900 protection concentrated on marginal areas such as islands and mountain tops, either because here there was no conflict with settlement or because these better answered to European concepts of beauty. After 1900 protection was very specifically given to areas of bush, which New Zealanders now appreciated both as scarce and beautiful, and which they increasingly associated with national identity.

Native forest was also increasingly appreciated for its tourist potential and as vegetation cover that held soil and water in place. However, there was a declining sense of the bush having any exploitable value as a renewable timber resource. By 1913 it no longer seemed credible that management and regeneration of the bush could satisfy many of the country's long-term timber demands.

In the decade between 1903 (when the *Scenery Preservation Act* was passed) and 1913 (when the Forestry Commission reported), the different rationales for native forest protection were jostling for position. By the end of the period the way was clear for a new attitude to the indigenous remnant to gain dominance in the twentieth century. Arguments increasingly centered not on how the bush might be made productive, but rather on how much was to be saved in its 'virgin' state and how much sacrificed.

The new way of thinking about New Zealand's forests, I have argued, differed notably from nineteenth century concepts of conservation. It

remains fundamentally distinct from those scenarios that accept and encourage integration with native ecosystems, in the European tradition. My analysis has addressed only the specific questions of when and how preservation arose as so powerful and attractive an option.

I note, however, that since 1914 a curiously fractured society has evolved in New Zealand that seeks spiritual sustenance through its native forests in particular while being physically removed and gaining no material sustenance from them. Whether this approach was (or is) necessary or, on balance, the most constructive way forward for New Zealand or any country: these are the larger questions, and they remain unanswered.

Notes

1 R. Kipling 1891. Our Lady at Wairakei. In V. O'Sullivan (ed) 1992. *The Oxford book of New Zealand short stories*, Auckland: Oxford University Press: 29.

2 For an account of the way forestry developed, by the then Director General of Forestry, see A.L. Poole 1969. *Forestry in New Zealand: the shaping of policy*. Auckland: Hodder and Stoughton.

3 Department of Agriculture 1912. *Annual report*. Wellington: Government Printer.

4 C.H. Mills in Appendices to the *Journals of the House of Representatives* (AJHR) 1901 H-50: 5; Francis Mander in *New Zealand Parliamentary Debates* (NZPD) 134 (1905): 744.

5 Joseph Witheford in NZPD 124 (1903): 493.

6 AJHR 1909 C-1B: 3.

7 NZPD 122 (1902): 965.

8 S. and J. Hill 1987. *Richard Henry of Resolution Island*. Dunedin: John McIndoe; C. Maclean 1999. *Kapiti*. Wellington: Whitcombe Press.

9 AJHR 1905 H-2A: 1; 1907 C-6: 3-5. The first reserves under the terms of the Act included Waitomo Caves in King Country and Flagstaff Hill in Otago.

10 P. Star 1999. Place of native forest in New Zealand's mental landscape. In J. Dargavel and B. Libbis (eds), *Australia's ever-changing forests IV: proceedings of the fourth national conference on Australian forest history*, Canberra: Centre for Resource and Environmental Studies, The Australian National University, Canberra, 1999: 91.

11 AJHR 1908 C-1B: 8.

12 NZPD 116 (1901): 373; *Otago Witness* 9 Jul 1913: 14.

13 AJHR 1908 C-1B: 4

14 AJHR 1907 C-1B: 1; 1907 C-1C: 1; 1908 C-1B: 10.

15 AJHR 1911 C-1B: 3.

16 AJHR 1913 C-12: lxx-lxxi, xxx.

17 T.F. Cheeseman 1913. The age and growth of the kauri. *Transactions of the New Zealand Institute* 46: 19.

18 AJHR 1913 C-12: xii.

19 AJHR 1913 C-12: xxii.

20 J. Sheerin (ed) 1993. *Measuring up: New Zealanders and the environment.* Wellington: Statistics New Zealand: 125.

21 J.P. Grossman 1909. *The evils of deforestation.* Auckland: Brett: 5. Comparable Australian developments are described in T. Bonyhady 2000. *The colonial earth.* Melbourne: Miegunyah Press.

22 AJHR 1902 H-2: 21.

23 The key papers are AJHR 1907 C-8; 1908 C-8, C-11 and C-14; 1909 C-4 and C-12.

24 AJHR 1908 C-8: 2.

25 NZPD 127 (1903): 88.

26 NZPD 126 (1903): 712; 127 (1903): 88.

27 AJHR 1903 H-2: iii.; NZPD 127 (1903): 400. For international comparisons, see T.R. Dunlap 1999. *Nature and the English diaspora: environment and history in the United States, Canada, Australia, and New Zealand.* Cambridge: Cambridge University Press: 97-127.

28 NZPD 163 (1913): 608; AJHR 1913 C-12, 16; C-12: 41. Native bird preservation, not discussed here, ran parallel to native forest protection.

29 A.R. Entrican in AJHR 1939 C-3; M. Roche 1990. *History of New Zealand forestry.* Wellington: GP Books: 205.

30 See A.H. Cockayne 1910. The natural pastures of New Zealand I: the effects of burning on tussock country. *New Zealand Journal of Agriculture* 1: 7-15. 53 flax mills operated in Auckland province alone in 1913. *Otago Witness* 11 Jun 1913: 1.

31 AJHR 1903 H-2: xv; 1905 H-2: 5.

32 NZPD 137 (1906): 637; AJHR 1909 C-12: 42.

27

Allied logging and milling in Papua New Guinea during World War II

Judith A. Bennett

The Japanese bombing of Pearl Harbour in the Hawaiian Islands on 7 December 1941 brought both the USA and Australia into the war in the Pacific. Australia had already been fighting in the European and Middle Eastern theatres since 1939. On all these fronts, armies certainly 'marched on their stomachs', but in the Australian territories of Papua and the Mandate of New Guinea (TPNG).[1] They also often made their way on wooden roads. These corduroy roads were made of cords of logs of coconut palm or tree saplings and slit tree trunks, laid across stringers on the ground surface so that men and machines would not be swallowed by the mud and swamps of coastal camps and bases. In this most tropical of islands, it seemed to be always raining. Although camps in the savannah around Port Moresby often fared better, corduroy roads, boardwalks, and dunnage for supply dumps and tent floors were the means of coping with the hazards of the wet. The Japanese troops, masters of bunker building, used thousands of coconut palms to make layered earth and log constructions for defence and cover. As well as shelters below and above ground, wood was needed for bridges, wharves and other structures. It was essential also for cooking in many places and for crating of equipment as the mobile war front advanced and receded around the island. The American engineers estimated that in establishing a substantial base in New Guinea about 30 000 board feet

(71 cu m) of timber per 1000 men were needed to develop a new base during the first 120 days of occupation, with about 4000 (9 cu m) for the same men per month to continue until completion.[2] Clearly, wood was a strategic material.

Obstacles to use of local timber resources

Given the distance from supply lines, all armies attempted to utilise local resources as much as possible. There were, however, two major obstacles to this in TPNG. First, little was known of the characteristics of the timbers. Few sawmills existed. There were about fifteen mills pre-war, but some of these were operated by missions mainly for their own use. These produced timber from a very limited range of tried species for the local, mainly expatriate market because Australian government tariffs had made the export of milled timbers to Australia unprofitable. The highest production recorded was in 1940-41 when the depressed copra market coupled with a flurry of interest from American furniture manufacturers boosted exports of fine New Guinea 'walnut' to about 7.5 million board feet (17 700 cu m).

Scientific surveys of the forest botany were few. J. Burnett had written a brief survey of Papua's forests in 1908 and C.T. White, the Queensland Government botanist, classified about 800 floral species in 1918. Hayes did much the same in New Guinea in 1921. Charles Lane-Poole completed a major overview of the main forest zones in the early 1920s, but little subsequently. As the Australian Government's first Inspector-General of Forests, Lane-Poole was instrumental in the appointment of James McAdam as the first Chief Forester attached to the New Guinea administration in 1938. McAdam had scarcely begun any survey or botanical work when he enlisted in the New Guinea Volunteer Rifles attached to the Australian army.[3]

The Australian government may have known little of the timbers of TPNG, but the Americans knew even less.[4] More, however, was known about the general nature of the forest. Although to the untrained eye and certainly to most servicemen, New Guinea, where it was not swamp or savannahs of cutting kunai (*Imperata* spp.) grass, was untouched jungle. Dense it may have been, but,

> the forests of Papua and the Mandated territories have been heavily damaged by the agricultural methods of the large native population. The remaining forests particularly in the coastal areas are not likely to occur in extensive tracts of virgin forests, but as smaller somewhat scattered areas separated by large areas which are not likely to be carrying commercial timbers.[5]

Most Melanesians practised a highly productive form of gardening, called 'swidden' or 'slash and burn'. Its success depended on large areas of forested land relative to density of population. A piece of land is cleared of forest with much of the debris left in place and burned. In this, the gardeners plant their crops of root vegetables such as taro, yam, and sweet potato along with tree crops such as bananas and nuts. The bulk of the root crops is harvested after a season while a new garden is prepared on a newly cleared block. Tree crops continue to be collected while bearing. Every year or two the cycle repeats. Gardeners tended to return to land that had lain fallow for say 10-20 years and, since the young trees and undergrowth are second growth specimens, they are far easier to cut and burn than the virgin forest.[6] Over the hundreds and even thousands of years from about 9000 BP of gradual population growth and migration, vast areas of forest thus slowly changed in tree composition with some sensitive areas suffering erosion, degradation, and even permanent change to grasslands.[7]

This pattern of land use meant that forests of mainly one or two dominant species were rare. Comparatively rich forest, such as the pine stands (*Araucaria cunninghamii* and *A. klinkii*) around the inland mining settlement of Bulolo remained largely untouched, except for localised demand until the Australians and American engineers built a road to the coast in mid 1944. The development of this mining industry had relied on human carriers and the aeroplane. The hardwood, kamarere (*Eucalyptus deglupta*), found in stands in New Britain and formerly milled by the Roman Catholic mission, was largely beyond the reach of the Allies with the occupation of the Gazelle Peninsula and Rabaul by Japanese forces from January 1942 until their formal surrender in September 1945.[8]

The second challenge to the utilisation of local timber was the lack of infrastructure. What little there had been in the territories before the war was in a few, scattered and predominantly coastal areas. Much had been destroyed under a scorched earth policy when the Japanese invaded.[9] As the European theatre of the First World War had been the model for the engineering training programmes of the Americans, they, like the incoming Australian forces, had to adapt fast to the new and trying terrain:

> the country is largely undeveloped, reef rimmed, heavily forested islands, devoid of roads and port structures. Here engineering starts from scratch and must be prosecuted with great speed.[10]

Any carriage of log to mill thus would have to be done on tracks cut on the spot or by sea.[11] Consequently, local timber used by the armed forces came from stands near bases or in range of coastal shipping.

Transients and colonials

The Allied forces had various ad hoc arrangements for procuring local timbers, but there was a basic difference in their attitude to resource exploitation. For the American authorities, New Guinea was just another tropical island where the war had to be fought. Unlike say, the Philippines or American Samoa, it was not one of their territories so they did not have to worry about post war consequences. In the early years of the war, the engineers of the Australian Infantry Force (AIF) worked in conjunction with service personnel who had been members of the former civil administrations of each territory. Under the command of the Australian army, these were transformed into a combined military one, known as the Australian New Guinea Administrative Unit (ANGAU) from December 1942. It was concerned with recruiting and supervising thousands of native males for the war effort as well as maintaining administration and health and welfare services in Allied-held areas. By June 1943 it had 23 777 Melanesian labourers under its control. Although ANGAU's purpose was to serve the strategic needs of the Allies, its ethos also included the protection of both human and non-human resources of the territories—an ethos that often collided with military exigencies. Forced to deal with immediacies, its long-term goal, nonetheless, remained the resumption of civil administration by Australia, a goal that had less relevance for the US authorities.[12]

The AIF used mainly commandeered civilian-owned sawmills to cut timber. As of December 1942 these five mills, located in Papua, were producing about 188 000 board feet (444 cu m) monthly. When the American units across the three services arrived in Papua from mid 1942, they brought in sawmills and equipment with construction and engineering units, and obtained locally commandeered mills unwanted by the AIF as well as some from Australia, though for much of the war had no specialist forest corps.[13]

By May 1943, as bases expanded and the front began to move north, there were increasing difficulties meeting the timber demand. The Americans had many of their engineers occupied in airfield construction and could not divert them to timber production.[14] The Australian forces in March 1943 were operating six mills, two in the Milne Bay area, two near Port Moresby, one to the south east at McDonald's plantation and one in New Guinea at Wau. ANGAU and the Australian army operated one in the Gulf district near Port Romilly, and the American engineers had three: two near Port Moresby, and one at Horada near Buna. ANGAU expanded its role in sawmilling and by mid year operated two commandeered mills in the Milne

Bay area at Kwato and Labe Labe. The Americans had ordered more mills, but they had yet to arrive. They believed ANGAU could obtain the local labour necessary for logging and milling as well as perhaps co-ordinate operations more. Official production had reached 499 500 board feet (1179 cu m) monthly by March 1943; whereas demand was more than 900 000 board feet (2124 cu m), estimated to climb to about 1.5 million board feet (3632 cu m) a month for the year June 1943-June 1944.[15] Milne Bay, for example, was short of timber piles and construction timbers when the US set up its main advance base there in mid 1943. The US forces used one of their own saw millers and a pre-war logger, Tom Flowers to assist with a survey of the timber potential of the Milne Bay islands and the adjacent D'Entrecasteaux group.

Transport was also a problem. Though military demand exceeded supply in all areas, there were instances of production being reduced, for example, at Port Romilly, in the Papuan gulf west of Kerema, because boats were not available to move milled timber east to Port Moresby before it was damaged by the elements and pests.[16]

From the first, timber had been brought in from Australia and the United States. Australian eucalypts were in demand for engineering timbers and the US sent supplies of Oregon pine and Douglas fir. This meant using shipping space that could be better devoted to carriage of medical supplies and food as well as men and munitions. Australia soon had its own timber shortage, as it was a base not only for its own armed forces, but also for those of the United States garrisoned there. With deferred civilian needs at home and wartime demands, pressure came from the Australian government as well as the American authorities for greater exploitation of timbers from New Guinea. The Australians even had hopes of supplying some of Australia's needs from this source.[17]

The Allies realised the necessity of rationalisation of supply, milling and distribution along with more systematic assessment and use of local reserves. The outcome was a conference in Melbourne on 29 July 1943 of representatives of the Australian and US armies (including James McAdam), ANGAU, the Australian Inspector General of Forests (Lane-Poole), the Allied Works Council, the Australian Controller of Timber, and Department of Munitions as well as the Department of External Affairs (the department responsible for TPNG). They focussed on three main questions—shipping, sawmill plant, and manpower with a central timber control to come under ANGAU, led by James McAdam. McAdam was to organise a survey of possible logging areas and to assemble 'all information pertaining to timber resources and the milling of such timber' as well as advise the forces on equipment

and supervise the running of all the Australian mills' personnel. He was also, 'to maintain records of the quantities of timber milled by both...forces'.[18]

Australian Forestry units

Despite the urgency, progress seemed slow. The Australian forestry units serving in the United Kingdom (Group Headquarters, 2/2 and 2/3 Forestry Coys) were recalled in August 1943, but needed transporting, leave, reinforcing and refitting. New units were to be formed with some transfers from others as well as from ANGAU.[19] Army authorities familiar with the terrain warned that production from TPNG near the front was fraught with difficulties and the possibilities of any surplus going back to Australia was unlikely.[20] As well as raising units that could conduct this extensive operation there was need for a technical unit based in Australia.

Table 1: Royal Australian Engineers Forestry Units as of 5 May 1944.[21]

Unit	Strength Established	Posted	Location	Remarks
2/1 Aust. Command Royal Engineers (Forestry)	23	18	Wallgrove, NSW	Under orders to New Guinea
2/1 Aust. Forestry Coy	165	114	Wagga, NSW	Under orders to New Guinea
2/2 Aust. Forestry Coy	165	113	Wallgrove, NSW	Under orders to New Guinea
2/3 Aust. Forestry Coy	165	125	Wallgrove, NSW	Under orders to New Guinea
1 Aust. CRE (New Guinea Forests)	38	-	Port Moresby	Waiting move to Lae
1 Aust. Forest Survey Coy	127	-	Lae	Being raised
2 Aust. Forest Survey Coy	127	-	Lae	Being raised

By April 1944 these eventuated. Major McAdam was the commanding officer of 1 Command Royal Engineers (the headquarters unit) while W.T. Suttie commanded the 1 Australian Forestry Survey Coy and A.E. Head in command of the 2 Australian Forestry Survey Coy. Major M.R. Jacobs headed the technical unit in Australia, responsible for organising wood testing and the like. Meanwhile, McAdam had managed to complete a general survey of the Milne Bay area, inspect the six Australian sawmills by then operating, and outline the characteristics of the local timber species. He

supplied the American forces with far more exact data than they had obtained from their own survey. By May 1944, most units were in TPNG or about to leave from Australia. The 2/1 Forestry Coy, after serving in the Northern Territory, was to join them much later in April 1945.[22]

Tasks of the Forest Command

McAdam, as Commander of 1 Royal Engineers, New Guinea Forests (CRE), had a huge brief. The Australian Army's chief engineer, Major General C.S. Steele recognised that the organisation needed to meet all the objectives of the July 1943 conference was equivalent to 'a well established Forestry Department' and this was to be carried out mainly by his CRE unit and the Survey Coys.[23] Although McAdam had some trained foresters in his team, few were familiar with tropical forests. Once all units had arrived in the Lae area his first task was to set up a crash course in survey methods and botanical and wood identification of New Guinea species. This school required considerable co-ordination as two specialists, Dr Eric Dadswell, a wood technologist and C.T. White, both with some New Guinea experience were needed, not only for the school, but also for some on-the-spot advice in different locations. The school ran from 17-29 July at Yalu near Lae, with lectures from two of the unit's own officers, L.S. Smith on botanical terminology, and L.T. Carron, on the interpretation of vegetative types from aerial photographs.[24] As well as being instructive this helped to consolidate the various units, some of which were soon to be in little direct contact with one another.

Now with a more cohesive and informed team, McAdam set about his main goals: recording the volume felled by the Allies; and placing the Survey Companies in likely productive forests accessible to bases; and liasing with the command of the three Forestry Companies to fell and mill timber. The forestry units were also involved in advising a variety of logging and sawmilling units scattered around the country.

The Forestry Companies were located where they could be of optimal use to the Allies, particularly the Australian army. By May 1944 the 2/3 and the 2/2 Coys were based in the Lae area and the 2/1 joined them in May 1945, based at Nadzab. Platoons of the 2/2 operated near Madang and Aitape in 1944-45; at Jacquinot Bay, New Britain in 1944-45, and on Bougainville in 1945. Theirs was a major contribution to production especially in the latter stages of the war as other units moved north or were repatriated.[25]

There were many difficulties in carrying out counts of overall production. In July 1943 when James McAdam gave his report to the Allied conference, his pre-war experience had taught him that,

> The lands and forests of the Territories are owned by the native peoples, and although the Administration had the right under the Timber ordinances...to acquire by purchase from the native owners timber and land for forestry purposes, actually very little timber has been so acquired. Most of the areas which have been purchased are under sawmilling operations. The bulk of the army's new sawmilling activity will broach native timber. Although very little appears possible in the way of adjustment at the present time, it will be necessary to collect and preserve records of all these operations so that eventually equitable recompense can be made to the owners for our use of their timber.[26]

In declaring this principle of compensation of the native people, McAdam was anticipating official Australian government policy by a full year and deserves credit for taking his responsibilities so seriously, for it became part of the official orders guiding the AIF's Commander-in-Chief, General Sir Thomas Blamey.[27]

As soon as his unit, 1 (CRE), arrived in TPNG, McAdam organised a count of sawmill production as well as of equipment, location and capacity. His unit arrived at a figure of 10 488 768 board feet (24 753.5 cu m) for the period ending 31 March 1944 (See Table 2).[28] These figures do not record production before about mid 1943. Several units, notably those of the US, had moved elsewhere, while certain areas had not been checked as they were difficult to access. McAdam also met resistance to the collection of statistics:

> Information regarding the operation of the Allied forces has been difficult to obtain. Some units felt that a directive from higher authority was required before the information could be made available. Units...have promised to keep records from 1 April 44, of future operations in the form requested and will make these available as soon as the necessary authority has been obtained.[29]

The command unit had particular difficulties with US forces. When asked to furnish data to fill the blanks in CRE's record, the suspicion arose that such data would be the basis for a claim against the US. Some, such as the Fifth Air Force command, refused to give any information. Negotiations at a higher level made it clear that such claims would fall under Reverse or Reciprocal Lend Lease accounting and thus the US would not be directly liable for claims. Official directives in June and August clarified the position for the Americans.[30] Records of production were of value to the American

command too because it then could have 'an orderly basis for submitting requisitions...for overseas shipment of lumber' and 'for allocating engineering sawmilling effort to new operations'.[31] The Australians made their own records available to the US to assist estimates. From late 1944 the records collated by CRE seem more reliable, though there were areas that still were not recorded by the unit. For example, the US 1613 Engineer Forestry Company arrived at Finschhafen in mid May 1944 and set to cutting imported timbers. By July it was felling native trees. In mid October, when it moved on to the Philippines, it had felled 923 322 board feet (2179 cu m) of local wood. There is no mention of this in McAdam's statistics.[32] CRE ceased the formal count in November 1945, but subsequently platoons of the 2/2 Forestry Company working on Bougainville and New Britain milled 1 286 208 board feet (3035 cu m) of local timbers to January 1946.[33]

It is difficult to calculate just how much timber was logged and milled by the Allies, even with these records.[34] A total of 60 308 644 board feet (142 328 cu m) for the period from about mid 1942 to January 1946 is a count based on monthly production averages to about mid 1943 then on more detailed data until the beginning of 1946. In the light of American reticence to late 1944, this total is very conservative. As late as June 1944, even some of the Australian units, particularly the Royal Australian Air Force (RAAF), were slow to co-operate with 'authentic' figures.[35] Often piles for uprights and wharf structures were not included in totals and these added up to a large proportion in some areas such as Milne Bay.[36] Moreover, the figure of 60 308 644 board feet was milled native timber, not the volume in log. In almost all of the 78 mills that operated to late 1944,[37] recovery was low; 'between 30 and 50%' was considered reasonable. Although recovery rates were meant to be stated on every return this was rarely followed consistently.[38] Again, while the American sawn volume seemed acceptable, it did not stand up beside the low log volume, at least for much of 1944.[39] Thus, in the light of these considerations—volume in piles, low recovery rates and under-declaration—it is likely that in log the volume was close to 120 million board feet (28 320 cu m) felled by the Allies. Moreover, coconut trees were not milled, just cut into lengths with portable or hand saws, so did not enter these calculations.

Table2: Production from mills, Territory of Papua and New Guinea, c. July 1943 to31 March 1944

Mill number and local name	Location	Capacity (B.ft/ 8-hr shift)	Production (B.ft '000)	Operated by	From	To
Port Moresby						
1. Eilogo	Uberi	5000	394	9 AUST WKSP & PK COY RAE	9/10/43	still operating
2. Ilolo	Uberi	3000	309	59 AUST CORPS FD PARK COY	5/7/43	26/8/43
				9 AUST WKSP & PK COY RAE	26/8/43	16/10/43
				8 AUST A TPS COY	16/10/43	
				24 AUST FD COY	closed	Dec. 43
3. Sogeri	Uberi	1000	120	NGF SIGNALS SCHOOL	Dec. 43	still operating
4. none	Port Moresby	1200	30	FRT ENGRS AEME	Nov. 43	still operating
5. Rigo Rd	Port Moresby	1200	40	2/1 AUST RLY CONST COY	Dec. 43	still operating
6. 19 Mile	Port Moresby	1000	300	11ADV WKSP AEME	Dec. 42	31/12/43
7. Topside	Uberi	2000	230	27 AIR MAINT SQN USA	31/12/43	still operating
8. none	Port Moresby			5 US AIR FORCE		
9. Durand Drome	Port Moresby		##	33 AUST EMP COY	Oct. 43	still operating
10. none				62 WKS WING RAAF		in forward area?
Buna						
11. none	Buna	1200	70	4 AAOD	Dec. 43	still operating
12. none	Buna	1200	28	162 AUST GEN TPT COY	Feb. 44	still operating
13. Thick & Thin	Oro Bay	7000	627	116 ENGRS USA	5/5/43	4/9/43
		7000	803	55 AUST FD PK COY RAE	9/4/43	3/3/44
14. Borio	Oro Bay			8 ENGRS USA 1 CAV DIV		ceased cutting
15. Dobudura	Buna		1200	5 AIR FORCE ENGRS	1/6/43	10/1/44*
16. Horada	Buna		860	43 US ENGRS	10/2/43	20/2/44**
Lae						
15. Nadzab	Buna	7000	280	5 AIR FORCE ENGRS	Jan. 44	Mar. 44
17. New Guinea	Wau	3500	150	HQ RAE 3 AUST DIV	3/3/43	still operating
18. Kulolo Mill	Wau	7000	26	2/4 AUST FD SQN	23/3/44	still operating
19. Malahang	Lae	12000	876	59 AUST CORPS FD PK COY AT RAE	24/10/43	still operating

Table 2 (Cont.)

Mill number and local name	Location	Capacity (B.ft/ 8-hr shift)	Production (B.ft '000)	Operated by	From	To
Lae (Cont.)						
20. none	Lae	1000	36	11 AUST FD COY RAE	11/5/43	20/1/44
21. none	Nadzab		7	4 AUST FD COY RAE	23/12/43	14/1/44
22. none	Nadzab	500	300	10 WSU RAAF	Dec. 43	Mar. 44
24. none	Nadzab	7000	294	615 ENGRS USA SOS	Feb. 44	Mar. 44
Finschhafen						
21. Kalueng Lakes	Masaweng R.	1000	3	4 AUST FD COY	23/12/43	14/1/44
42. Song R.	Masaweng R.	1000	8	2/1 AUST MECH EQUIPT COY		
Milne Bay						
22. Kalo Kalo	Ferguson Is. West	3000	128	10 WSU RAAF	4/2/43	10/8/43
23. none	Goodenough	7000		3 BN US ENGRS		
25. Gilli Gilli	Milne Bay	5000	21	1 AUST FD SQN RAE	10/2/44	
26. Waigani	Milne Bay	2000	127	ANGAU	Nov. 43	Dec. 43
	Milne Bay	2000	43	5 AUST ARMY TPS COY	Feb. 44	
27. Waigani	Milne Bay	2000	65	5 AUST ARMY TPS COY	Nov. 43	Feb. 44
28. none	Milne Bay	1000	117	21 AUST FWD COY RAE	29/10/43	
29. Kwato	Guaugurina	8000	964	ANGAU	Aug. 43	
30. Labe Labe	Milne Bay	4000	973	ANGAU	Jul. 43	
31. Sariba	Guaugurina	1000	10	ANGAU	Feb. 44	
32. Waigani	Milne Bay	1000	56	104 AUST FOD	Sept.43	
33. Wataluma	Goodenough	7000		3 BN US ENGRS		
34. Gumi	Goodenough	3000	71	4 WSU RAAF	Jan. 44	
35. Sanderson Bay	Milne Bay	4000	892	10 WSU RAAF		27/3/44
36. Sanderson Bay	Milne Bay	8000	60	USA SOS	22/2/44	
37. East Cape	Milne Bay	8000	27	USA SOS	22/2/44	
38. Gamadoda	Milne Bay	7000		105 NCB		
39. Gamadoda	Milne Bay	7000		115 NCB		
40. Gamadoda	Milne Bay	7000		118 NCB		
41. DCRE Dump	Milne Bay	2000	158	51 AUST FD PK COY	23/7/43	23/2/44
Gulf District						
43. Romilly	Papuan Gulf		2125	RAAF ANGAU	Sept. 43	still operating
Total			12 828			

* NARA RG 77, entry 305c, file 194: Hewitt to Chief Engineer, 3 April 1944
** NARA RG 77, entry 305c, file 194, Brauns to Chief Engineer, 13 April 1944
Cut 2000 tons firewood, not included in total
Note: Several units submitted returns much later in 1944 and are not included

Timber's contribution and cost

The total contribution of New Guinea timber to the war effort was considerable. Its exact ratio is less clear. In US calculations they estimated it at about a third. The picture becomes very complex because of the use of US imported timber by Australian units and vice versa, the varying needs of different sections over time, and the combining of the South West Pacific Area's needs in timber as it included Australia, New Guinea and the Netherlands Indies.[40] Overall, in TPNG it would be safe to say the contribution was between a quarter and a third. Who cut it? About 63 percent was felled and milled by the US forces; about 20 percent by the AIF, including the Forestry Companies; about 12 percent by ANGAU, and about 5 percent by the RAAF. What was this worth? In terms of shipping space the production of 60.3 million board feet from TPNG saved about 172 492 tons; in terms of cost of freight from Australia alone, it saved about £A 862 463; in terms of cost of the equivalent volume in Australia, it saved around £A 1 435 023. This, however, is not what it was worth of itself. In comparison to Australia both before and during the war the wage scale for unskilled TPNG labour would have produced lower labour costs. Costs of production—labour, equipment, expertise, and internal transportation would have to be added to get a realistic price of what the timber had been worth standing. The timber used, perforce, was green and subject to bad cracking and splitting as it dried in structures. Yet much of this timber was for short term use anyway. Based on Australian pricing from pre-war New Guinea, internal costing for Reverse Lend Lease for the Americans was to be averaged for all timbers, from the best furniture timbers at 2s 6d per 100 board feet to the most common at 10d. By agreement, the Allies set the price at one shilling per 100 board feet. So at this price, the Americans would be debited about £A30 154, were Lend Lease accounting to prevail. At this rate, the owners of the resource, almost always Papua-New Guineans, would be due the same.[41]

Production and survey

In theory, production was supposed to be based 'on a sound afforestation basis' to protect timber assets; [42] but the conditions of milling near the battlefront were hardly conducive to this. For example, moving portable mills was a major undertaking so the tendency seems to have been to mill as much of the best timber as possible in any one area. The American 1613

Engineer Forestry Company, described conditions in 1944 near the Mape River, Finschhafen that were common throughout TPNG:

> Two shifts operated almost continually on skidding in the woods and sawing in the mill, an average of 11 699 F[eet] B[oard] M[easure] [27.6 cubic metres] of lumber per shift maintained. The best day's sawing of the native hardwoods produced 17 441 FBM [41 cubic metres] in an eight hour shift as compared with a top eight hour cut of 40 913 FBM [96 cubic metres] of Douglas fir cants in the Base Depot mill. These statistics give a pretty fair idea as to the difficulties encountered in sawing the native hardwoods. The logs had been skidded through mud deep enough to completely engulf them; rocks were embedded in the bark, and log washing facilities were inadequate and unsatisfactory. Shrapnel was encountered in a great many logs and rarely detected before being struck by the head saw. Saws ran hot; new teeth became dulled often on the first log sawed after filing; the timber cut considered of (sic) some of the hardest and stringiest in the world and the logs were far from cylindrical in shape, having spray butts and often surface irregularities that made the logs extremely difficult to turn in the carriage. In the woods the loggers often worked in a deluge of rain in mud to their knees. 'Cats' [Caterpillar tractors] bogged down above their tracks in the gumbo, and slabs had to be continually layd (*sic*) in the skid roads to keep them passable. Creek crossings were numerous and water in the magneto and other parts of the 'Cat' motors was an unending source of trouble. Splay rooted trees made the use of 'spring boards' essential, and thickly hanging vines made falling extremely hazardous.[43]

Logging gangs, moreover, were more concerned with their own safety than forestry desiderata of peacetime. In December 1944 the US Army moved out its logging crews from Bougainville. Consequently, only the naval Construction Battalions or CBs (Seabees) were left to log and mill for the US in the Torokina area of that island.[44] Their logging was,

> vital work as it is the principle source of crating material. The war has moved closer to some of the men as on two occasions an enemy soldier has been flushed out while clearing ops [operations] were going on. Arming this crew has been done as a precautionary measure.[45]

In such conditions it is hard to imagine that the loggers were fussy about how they felled; 'operational necessities' prevailed.[46] The cleanest, most accessible trees were taken in quantity, no matter whether or not seed trees were left. Moreover, 'a sound afforestation basis' assumes considerable knowledge of silviculture of native species. Such knowledge was non-

existent at this time. Even when a species was familiar to the millers, such as the hoop pine (*Araucaria cunninghamii*), its particular ecology in New Guinea was not necessarily the same as in Queensland where it was also a native.

There were other considerations beside afforestation that were often ignored by the milling units. It was true that many of the species cut by sawmillers were of little direct use as structural timbers to the Melanesians, though more than the millers realised were used for medicinal purposes. Some trees were especially valued and these included the galip nut (*Canarium* spp.), a major dietary item. ANGAU was concerned in mid 1944 when the 2/2 Forestry Company took over a mill on Karkar Island from an army Park Detachment, as Grouch, a man with pre-war experience in TPNG, left. His attachment to milling units had been supported by ANGAU as he made the millers 'conscious of the importance of preservation of Galip trees'.[47] In August, a general directive went to all units to draw on ANGAU for this information.[48] Further orders to consult ANGAU before felling followed as, 'It is desired that native food trees not be utilised for sawmilling or construction purposes except in cases of emergency'.[49] Such concern was not misplaced as later that year the same unit, the 2 Platoon of the 2/2 Forestry Company, working at Aitape was still felling and milling the tree, remarking how easy it was to cut.[50]

As in this case, it seems very likely that ease of working the timber became a consideration if millers had a choice. In the main, the timber needs of the Allies fell into two categories: hardwoods of durability and strength for use in the weather and water, and softer timbers for interior construction. Borers and fungus made short work of most untreated cut timbers in TPNG. By mid 1943 McAdam was convinced that durable timber was needed for only about 20 percent of wartime construction because, of its nature, it was temporary. The most durable timber was Kwila or Melila, *Afzelia bijuga*, (now classified as *Instia bijuga*); *Pterocarpus indicus* and *Vitex* spp. were useful too, but hard to get in bigger sizes. For undersea piles resistant to worm, Kasi Kasi (*Metrosideros* spp.) from the Milne Bay area was ideal, but scarce. Mangrove (*Bruguiera rheedii*) piles were often used instead for short periods. Good inside construction timbers included Okamu or Taun, *Pometia pinnata* as well as the *Calophyllum*, *Dysoxylon*, *Mango* and *Dracontomelum* species. The Bulolo pines (*Araucaria* spp.) were good construction timbers too. Up to 1 April 1943, although actual volumes were not recorded, the most common hardwood timbers reported were kwila (*Instia bijuga*) at 33 percent of the mills and the medium hardwood laguna (*Vatica papuana*) at 19 percent, mainly in Milne Bay. Taun (*Pometia pinnata*) was produced at 38 percent of the mills. It was an excellent internal construction timber, and like kwila, was

found in most coastal areas. A timber with similar uses, *Calophyllum* spp. was produced at 16 percent of the mills also mainly in Milne Bay. Both devoura or milky pine (*Alstonia scholaris*) and 'cheesewood' were each milled at 28 percent; the former mainly near Port Moresby and the latter in Milne Bay.[51]

In terms of their wider objectives, the survey units perhaps embodied the ideals of modern forestry—of assessing forests for sustainable extraction and protecting of the resource—more than the production units. Instructions for the CRE given as early as November 1943, for the Survey Companies made clear the importance of the long view:

> Complete surveys will be made, and detailed records will be kept in such a manner that they can be passed over to the civil administration when a change from a war footing to civil control is implemented.[52]

The primary task of the Survey Companies, of course, was to find viable stands of accessible timber for immediate wartime needs, but these needs shrank with the decreasing area under Japanese control. By war's end the Companies had covered a huge area on the mainland coast and the islands of Milne Bay, Manus, New Britain and Bougainville. Much of this work was done by means of strip surveys through the jungle. Even when the Americans supplied aerial photographs that enabled the surveyors, with training, to match tree type to appearance of the canopy and habitat in the aerial photograph with locations on the ground, much footwork had to be done for accurate mapping. They relied extensively on native labour for carriers, for strip cutting parties as well as tree climbers.

Throughout 1944 and even to late 1945 in some regions, surveying was a very dangerous occupation. Like the trees, Japanese patrols were often everywhere. Even in the face of defeat, the Japanese were more likely to attack than surrender. Though the Survey Companies had basic military training they were not front line infantry or commandos. When they were in the jungle they were concentrating on mensuration, topographical and botanical matters, not defence or offence. Another worry was that the native carriers and assistants might, and sometimes did, desert. Most of this labour, recruited by ANGAU was conscripted and, in spite of the considerable courage and fortitude of the 'Fuzzy Wuzzy angels' as carriers on the Kokoda and other trails, these 'angels' were civilians who missed their homes and were terrified of the Japanese.

There were risks also of both loggers and surveyors exposing themselves to disease, especially malaria as they went about their work in the jungle. Both native labour and military personnel, once away from base camps, sometimes neglected to take their suppressant atebrine tablets. The usual checks done at base that men had taken precautions against the mosquitoes

were absent. If, in the late afternoon or evening, tent flaps and mosquito nets were left open or sleeves rolled up, the various mosquitoes would soon gather and inject the parasite that caused malaria or other diseases such as dengue fever. More significant perhaps was the men's inability to control the environment of the jungle as pools of water and streams were too numerous to ever be treated with insecticides. In New Guinea, the enemy was as much the mosquito as the Japanese, for malaria can be fatal, not only debilitating.[53]

In spite of these hardships, the Survey Companies built up a large catalogue of aerial photographs and maps. Over 30 percent of TPNG's vegetation was mapped on a scale of 1:63 360. By the time fighting stopped more than a quarter of these mapped areas had been checked on the ground. Another task was botanical surveys and several dozen area collections were made and sent to the Commonwealth Scientific and Industrial Research unit in Australia for identification and classification. They also prepared timber samples for testing in Australia. In all, over 1500 specimens had been collected and by the end of the war botanists had studied 620, listing 295 separate species. That collection was to become eventually the basis of the post war herbarium at Lae. On a more informal basis, Lieutenant Carron who interpreted the aerial photographs by stereoscope taught six TPNG men to identify trees in this way. This work continued until the end of the war, being curtailed in October 1945 by the release of native labour and finally by the orders for disbandment.[54]

As well as the demands of war, the orientation of the Survey Companies reflected the wider goal of assembling knowledge for the future civil administration. McAdam, anxious that no time be lost, approached J.R. Halligan, the Secretary for External Territories in May 1945 to ensure the transfer of as much data, personnel, and equipment as possible from the AIF to the nascent Forestry Department. In the event, the transition to civil government came in stages over the period October 1945-June 1946 and was not as seamless as many had hoped, but a Forestry Department was part of that new administration.[55]

Consequences and conclusion

War destroys, but the demands it makes often provide the foundations for the works of peace. It is not possible to assess the damage to the forest resource and ecology of TPNG in any specific terms—other than the estimated volume felled. Certainly, there were immediate results: the increase in mosquitoes in the region of logging as a result of ditches and drainage blocked by movement of soil and debris. Where logging areas were adjacent

to camps the malaria control units found their work increased. Timber extraction was intensive in areas near the camps—Port Moresby, Milne Bay and adjacent islands, Goodenough Island, Buna, Lae-Nadzab, Wau, Finschhafen, Aitape, Jacquinot Bay, Torokina and Manus Island, though more distant supply areas were also logged such as Romilly and Karkar Island. Longer term, at least into the late 1950s, reconstruction works involved in extension of services still needed imported timber because forest areas close to the expanding administrative centres had been worked out in the war.

It was within this context of Australia's administrative responsibilities as well as the values of the TPNG villagers that James McAdam in 1943 had articulated the need to plan for the future, not only in forestry, but also in compensating the owners of the forest timbers for wartime extraction. His view was echoed a year later by the Minister for External Territories, E. Ward. The Australian government set up a three-man committee to investigate compensation in TPNG. Clamorous expatriates who had fled from TPNG to Australia were being assisted with their claims. The Barry report of July 1945 reflected the acceptance that the Australian government would pay for legitimate war damage caused by its own forces, its allies or the enemy in TPNG. For the loss of milled timber, two-fifths of the royalties would go to the communal owners of the land, with three-fifths into a trust fund for reforestation.[56] The amount allocated for compensation for milled timber set at the basic 10 pence per 100 board feet was initially £10 000, and the overall compensation package for all war damage and related deaths was set at £2 210 000.[57] As claims came in between 1947 and 1960, however, the bill climbed to £4 000 000, which was disbursed to the local people in a systematic manner by district officers visiting all villages touched by the conflict. It seems few large claims were made for timber trees, but the compensation was paid and the records were there to support them because of the foresight of McAdam and the support of the Australian government. Overall, 4 million pounds was an enormous sum for a population of fewer than one million then known to the administration. This amount was probably the highest per capita compensation paid to any Pacific Island people following the war.[58] This was, moreover, apart from the costs of wartime relief of over 1.4 million pounds and post war administrative spending which was far greater than anything before the war when yearly grants from Australia never exceeded £60 000.[59]

The other major result of wartime timber production was an expansion in the knowledge about the range and value of TPNG's timbers. The Forestry and Survey Companies assembled significant data about the forests and the

characteristics of the timber. Much of this information was passed on to the Forestry Department. This department had been created partly as a result of Australia's recognition that it had to further the development the people of TPNG and thus the defence of Australia, and partly because McAdam as former Commander of Royal Engineers, New Guinea Forests, and the Territory's Chief Forester, was on the spot shuttling between Canberra and TPNG to lobby for it. The Forestry Department, in spite of staff shortages until the late 1950s, became part of a greatly expanded administrative structure. In time, this Department extended both its productive and protection roles to the rich forests of TPNG, providing a considerable legacy for the new government to underwrite its independence in 1975.

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Notes

1 Hereafter referred to as TPNG unless only one region is specified.

2 National Archives and Records Administration, United States of America (hereafter NARA), Record Group (hereafter RG) 305C, file 194: Haseman, Analysis of timber requirements and local production, 21 June 1944. Note that board feet = superficial feet or feet board measure. This measurement is one foot long, one foot wide and one inch thick.

3 W. J. Jonas, 'The Commercial Timber Industry in Colonial Papua New Guinea', *Pacific Studies*, 8, 2, 1985, p. 46; Brian Essai, *Papua and New Guinea: a contemporary survey* (Melbourne, 1961), p. 139; National Archives of Australia (hereafter NAA): A452, 59/6/29: McAdam to Lane-Poole, 22 Feb., 1 July 1938; Lane-Poole to Secretary, Prime Minister's Dept., 4 Feb. 1941; McAdam to Lane-Poole, 7 Feb. 1941. R. G. Robson, *Pacific Islands Year Book, 1942* (Sydney, 1942), p. 236. See also, C. E. Lane-Poole, 'The Forest Resources of the Territories of Papua and New Guinea,' in Staniforth Smith, (compiler), *Handbook of the Territory of Papua* (Canberra, 1927), pp. 65-68.

4 NAA, A452, 59/6/29: McAdam to Lane-Poole, 7 Feb. 1941; Australian War Memorial (hereafter AWM) 52, 5/32/2 (Mar.-Nov. 1944): Steele, Development of timber resources in New Guinea, 19 Jan 1944; NARA RG 77, entry 305C, file 192: McAdam, Report, July 1943; St. Clair to Hobbs, 14 May 1943; Klinke to Hough, 19 June 1943; Crane to Klinke, 22 June 1943. In 1925-26, L. G. Brass of the Arnold Arboretum, Boston collected about 1000 species in Papua, but knew little of the timbers' properties. Robson, *Pacific Islands Year Book, 1942*, p. 236.

5 AWM 52, 5/32/2 (1943-1945): CSIR, Notes on sawmilling in SW Pacific areas, 11 Nov. 1943

6 Leon F. Peters and William J. Neunschwander, *Slash and burn: farming the Third World forest* (Moscow, Idaho: 1988), pp. 1-3; H. C. Conklin, *The study of shifting cultivation* (Washington, DC, 1963), p. 1.

7 Donald Denoon and Catherine Snowden eds, *A history of agriculture in New Guinea: a time to plant and a time to uproot*, (Boroko, Port Moresby, [1981]), pp. 17-28, 43-47, 55-64.

8 NARA RG 77, entry 305C, file 194: Information for Major Cheeseman, c. Oct. 1943; NARA RG 77, entry 305C, file 192: Lane-Poole to Cole, 25 May 1943; *Pacific Islands Monthly*, Aug. 1944, p. 11. The extent to which the Japanese used this timber and other timber is unknown. The AIF prior to the fall of Rabaul to the Japanese in January 1942, had purchased about 50 000 board feet from a private saw miller, New Britain Timbers Pty Ltd (NAA, SP423/3, S101-S300: Alderman, New Britain Timbers, 27 Sept. 1943). A one-lane road operated from late August 1943 from Wau south to Bulldog on the Lakekamu River. David Dexter, *The New Guinea Offensives* (Canberra, 1961), p. 270.

9 NARA RG 77, entry 305C, file 192: McAdam, Report, July 1943.

10 NARA RG 77, entry 305C, file no 104, 319: Reports misc.: Treland, Notes on army engineer operations in SWPA, n. d., c. Apr. 1944.

11 AWM 52, 5/32/2 (1943-1945): QMG, Minute, 3 Aug. 1943.

12 AWM 54, 80/8/17: Stanner, Appreciation of the current situation and problems with ANGAU, c. Nov. 1943; NARA RG 77, entry 305C, file 461, Natives employed, 21 June 1943; Ian Downs, *The Australian Trusteeship in New Guinea 1945-1975* (Canberra, 1980), pp. 6-8.

13 NARA RG 77, entry 305D, file A2: Annual report, Advanced Planning, c. Dec. 1942.

14 NARA RG 77, entry 305C, file 192: R.J.B. to Rose, 18 May 1943.

15 NARA RG 77, entry 305C, file 192: Wright, lumber to advanced base, 24 Apr. 1943; Teale to Chief Engineer, 6 Apr. 1943; Casey to Johnson, 5 Apr. 1943; St. Clair to Hobbs, 14 May 1943; Robinson to Chief Engineer, 29 Mar. 1943.

16 NARA RG 77, entry 305C, file 192 : Sverdrup to Base Engineer, 29 June 1943; Sverdrup to Drake-Brockman, 2 July 1943; R.J.B to Rose, 18 May 1943; Kramer, Notes of Timber Production meeting at Victoria Barracks, July 1943; NARA RG 77, entry 345, Robinson to Teale, 21 July 1943 and encls.

17 NARA RG 77, entry 305C, file 192: Status of lumber production, 21 May 1942; L. J. S. to Chief Engineer, 10 July 1943; L. T. R. to Chief Engineer, 13 July 1943; McAdam, Report, July 1943; AWM 52, 5/32/2 (Mar.-Nov. 1944): Lieutenant-General, Development of timber resources, 11 Nov. 1943.

18 NARA RG 77, entry 305C, file 192: Kramer, Notes of Timber Production meeting at Victoria Barracks, July 1943.

19 NARA RG 77, entry 305C, file 193: Ostrander to Commanding General, 8 Sept. 1943; AMW 52, 5/32/2 (1944 Mar.-Nov.): Dawson, Raising of Foresty units, 2 Mar. 1942; Military secretary, Tranfers to Forestry units, 10 Mar. 1942.

20 AMW 52, 5/32/2 (1944 Mar.-Nov.), Lieutenant-General to Secretary [Prime Ministers' Dept], 11 Nov. 1943.

21 NARA RG 77, entry 305C, file 194: Table based on Australia liaison officer to US Engineers, 5 May 1944. Strengths include officers, senior ranks and lower ranks.

22 AWM 52, 5/32/2 (1944 Mar.-Nov.): Cockburn, Forestry Policy for New Guinea, 5 May 1944 and encls.; NARA RG 77, entry 305C, file 194: McAdam, Timber Production resources of Milne Bay, 11 Jan. 1944; L. T. Carron, *A history of forestry in Australia* (Canberra, 1985), p. 298.

23 NARA RG 77, entry , 305C, file 192, Steele to LGA, 19 Jan. 1944; Carron, *A History of Forestry*, p. 297.

24 AWM 52, 5/32/2 (1944 Mar-Nov.): McAdam to Chief Engineer, 19 Apr. 1944, 23 July 1944; McAdam, report on Botanical school, July 1944 and appendices.

25 By November 1944, there were about 28 mills operating, of which about eight were Forestry Company mills. AWM 52, 5/32/2 (1943-1944): Steele to LGA, 5 Nov. 1944

26 NARA RG 77, entry 305C, file 192: McAdam, Report, 23 July 1943.

27 AWM 52, 5/32/2 (1944, Mar-Nov): Commander in Chief, Directive, n. d., c. Jan. 1944. The Minister for External territories, E. Ward in September 1944 first enunciated the Australian government's intention to pay compensation, not only to the expatriate community, but also the native peoples. (NAA A518/1, A320/3/1 Pt 1: Ward to [?], 20 Sept. 1944; Ward to Barry, 26 Oct. 1944; cf. Hank Nelson, 'Pay back: Australian compensation to wartime New Guinea', in *The Pacific War in Papua New Guinea: perceptions and realities*, Second Symposium, International Research Project, Australian National University, Sept. 1999, pp. 26-27.)

28 McAdam's original count to 31 March 1944 excluded two major sets of figures available shortly after. These have been added in Table 2 as noted.

29 NARA RG 77, entry 305H, file 348: McAdam, Report of sawmill operations, 10 Apr. 1944.

30 NARA RG 77, entry 305H, file 194, Hewitt to Chief Engineer, 30 Mar. 1944; NARA RG 77, entry 305H, file 193: H. J. C., Policy, furnishing information to NG force on timber production, 24 Apr. 1944; Allen, Lumber production in forward areas, 4 June 1944; NARA RG 77, entry 305C, file 194; Wright, Lumber production in forward areas, 9 Aug. 1944. The Dutch were the colonial power that controlled west New Guinea before the war. USA 'lent' or leased equipment or supplies to its Allies. When the Allies did the same to US it was Reciprocal Lend Lease. Post-war accounting was to reconcile debts; in the event most were forgiven.

31 NARA RG 77, entry 305C, file 194: Haseman, Analysis of timber requirements and local production, 21 June 1944.

32 NARA RG 77, entry 305H, file 348: McAdam, Report on Sawmilling Operations in Australian New Guinea, 10 Apr. 1944; NARA RG 77, entry 305H, file 364: Frisby, 1613 Engineer Forestry Company: Historical summary, 10 May 1945; AWM 52, 5/32/2 (1944, Jan.-Nov. 1945):, 1 Commander Royal Engineers, New Guinea Forests Reports.

33 AWM 52, 5/32/4 (Sept.1945-Jan. 1946): HQ and No. 1 Platoon 2/2 Forestry Coy; (June-Dec. 1945): 3 Platoon 2/2 Forestry Coy.

34 The Royal New Zealand Air Force operated a US (57th CB) sawmill on Manus in late 1944 until their own was brought up from the Solomon Islands in 1945. NARA RG 313, 313-58-3300: Manus Base, Planning Board Conferences, 12 Nov. 1944, 10 June 1945; Judith A. Bennett, *Pacific Forest: A History of resource control and contest in Solomon Islands, c. 1800-1997* (Cambridge and Leiden, 2000), p. 120.

35 See, for example AWM 52, 5/32/2 (1944): McAdam, Monthly report, 2 June 1944. I have calculated this figure from averages for much of 1942 and early 1943 as well as more specific returns from c. mid 1943. Its accuracy is reinforced by the comparable

official total cited for production to 30 September 1944 of 41 605 102 board feet. AWM 52, 5/32/2 (1943-1944), Steele to LGA, 5 Nov. 1944.

36 AWM 52, 5/32/2 (1944): 1 CRE, New Guinea Forests Reports.

37 AWM 52, 5/32/2 (1943-1944), Steele to LGA, 5 Nov. 1944. Essai in his excellent summary calculates the actual sawn timber at 80 million super feet, but does not show how he arrived at this figure and unfortunately does not cite his sources. This has been cited by Jonas in cubic metres, but the conversion seems to have been done to board feet true measure rather than superficial feet Hoppus measure. It seems that Hoppus was the accepted measure during the war. Essai, *Papua and New Guinea*, p. 140; Jonas, 'The Commercial Timber Industry in Colonial Papua New Guinea', p. 47.

38 AWM 52, 5/32/2 (1944): Hebblethwaite, Sawmill returns, 1 June 1944.

39 AWM 52, 5/32/2 (1944): Hebblethwaite, Sawmill report, 3 Aug. 1944.

40 NARA RG 77, entry 305C, file 194: Haseman, Analysis of timber requirements and local production, 21 June 1944.

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42 AWM 52, 5/32/2 (Mar.-Nov. 1944): Lieutenant-General, Development of timber resources, 11 Nov. 1943.

43 NARA RG 77, entry 305H, file 364: Frisby, 1613 Engineer Forestry Company: Historical summary, 10 May 1945.

44 Though these men had basic training, they were non-combatants and experienced tradesmen. They were older than the front line troops.

45 NARA RG 313, 313-58-3250, War Diary of NAB, Torokina, Dec. 1944.

46 NARA RG 77, entry 305C, file 194, R. D. L., Timber production in forward areas, 12 Aug. 1944.

47 NAA A9844, Microfiche, TPNG Patrol Reports: Karkar Island, 4 of 1944/45. Hamilton to Headquarters, Northern Region, 17 July 1944; AWM 53, 5/32/4 (Sept. 1943-Oct. 1944): 2/2 Forestry Company, 16 July 1944.

48 NARA RG 77, entry 305C, file 194: Chapman to LHG, 11 Aug. 1944.

49 NARA RG 77, entry 305C, file 194: Fitch, Timber Production in forward areas, 8 Oct. 1944.

50 AWM 52 5/32/4 (Jan. 44-May 45): 2 Platoon 2/2 For. Co., 20 Nov. 1944.

51 NARA RG 77, entry 305C, file 192: McAdam, Report, July 1943; NARA RG 77, entry 305H, file 348: McAdam, Report of sawmill operations, 10 Apr. 1944. The Allied forces could not use indigenous knowledge to the maximum as the one tree species could have hundreds of different names, depending on location as there are more than 750 different language groups in TPNG. Milky pine and Cheesewood seem to be the same species.

52 AWM 52, 5/32/2 (Mar.-Nov. 1944): Lieutenant-General, Development of timber resources, 11 Nov. 1943

53 See for example, NARA RG 313, 313-58-3416: Preventative Disease Officer to Commander, 5 Sept. 1944

54 Essai, *Papua and New Guinea*, p. 141; Jonas, 'The Commercial Timber Industry in Colonial Papua New Guinea', p. 47; Interview, L. T. Carron, 21 Jan. 2002; AWM 52,

5/32/2, (1944, Jan.-Feb., Mar.-May, June-Aug., Sept.-Nov. 1945); Commander Royal Engineers New Guinea forest reports; AWM 52, 5/32/6 (May-Aug. 1944, Sept-Dec. 1944, Jan.-June, July-Oct., Nov. 1945-Jan 1946): 1 Forestry Survey Coy; AWM 53, 5/32/7 (May-Sept. 1944, Oct. 1944-Apr. 1945, May-Nov. 1945): 2 Forestry Survey Coy.

55 NAA A452, 59/6/29: McAdam to Halligan, 7 May 1945; Halligan to Sec. of Army, 14 Sept. 1945, and encls; Downs, *The Australian Trusteeship*, pp. 10-25, 53.

56 The three were Judge J.V. Barry, J. Taylor, member of the TPNG district administration, and the anthropologist, Ian Hogbin. NAA A463/17, item 1956/1096: Barry Report, p. 41-42.

57 At this rate, for common timbers, the 60 308 644 board feet would be worth £25 128.

58 NAA A518/1, A320/3/1/Part 1: Humphries to Sec., Dept of External Territories, and encls.; NAA A463/17, item 1956/1096: Barry Report, p. 87; Robson, *Pacific Islands Year Book, 1942*, pp. 229, 268, 269; Downs, *The Australian Trusteeship*, pp. 40-42: Nelson, 'Pay back: Australian Compensation to Wartime New Guinea', p. 27.

59 NAA A9373, item 1: ANGAU, Report for Feb. 1942-Sept. 1944; Robson, *Pacific Islands Year Book, 1942*, pp. 241, 278. In the period 1947-1950, £1 770 753 went to administrative spending. For the same period, compensation amounted to £1 076 611. See Downs, *The Australian Trusteeship*, p. 68.

28

A short history of fire management in the USA

David Ryan

Introduction

Fire management decisions, mostly made nearly one hundred years ago, have adversely impacted on the forests of western USA and adjacent parts of Canada. This brief account of my impressions is primarily based on two visits to western North America, discussions with a number of North Americans associated with forest management and assisted by references from a few editions of the periodical *Evergreen*. There are very high proportions of dead and dying trees in the forests of western North America. It is becoming widely accepted that the forest health tragedy is a result of the 100 year old policy of excluding fire.

Disappearance of diversity

The National Forests of the USA are Federal lands. Originally, many were not really 'forests' in the modern sense of the word but had an appearance more like the traditional English sense of forests being grassy areas with scattered trees or with more trees, like woodlands. Grazing, usually by deer,

was the prime function. Such was the scene that usually confronted the early European settlers of western USA (*Evergreen Magazine*, March-April 1994).

In the USA, between 1896, when the Congress declared the first Forest Reserves, and 1910, the National Forest System grew from 7 to 68 million hectares (MacCleery 1998) The National Forests are mainly located in western USA, there being little public land left in the eastern section when declarations commenced. The system was created mainly to protect watersheds and to serve as a future source of timber for a fast-growing nation. However, the western National Forests covered a wide variety of habitats. Tall woodlands were a feature but often the wooded areas were clumped. Open savannas and herb fields were common and rolling grasslands were widespread. Young forests, old forests and dense moist forests also occurred, although it seems that old moist forests may have been the exception rather than the rule. The rapid disappearance of this diversity in many areas over the last one hundred years or so is now a cause of widespread concern (*Evergreen Magazine*, March-April 1994).

Paiuté forestry

Prior to European settlement the western forests were not as dense as they are today. There were fewer trees with more open spaces between the trees. Fires burned more frequently which helped maintain the open spaces while minimising the accumulation of woody debris on the forest floor (Zybach 1994a, 1994b). It is now widely recognised in the USA and Canada that prior to European settlement the Native Americans regularly burnt the countryside. The result was a much different appearance to that usually seen today with grass dominating the ground cover and many places park-like or virtually treeless. This controlled light burning was known as 'Paiuté forestry', the Indian way. Some early notes show this:

> Instead of finding an uninterrupted forest carrying 100 000 feet or more per acre reaching from the Cascades to the Pacific, the first settlers 75 years ago (1840) found in the valleys great areas of 'prairie' land covered with grass, brakes or brush which were burned and kept treeless by the Indians, and mountain sides upon which forest fires had destroyed the mature forest and which were then covered by 'second growth' of Douglas-fir saplings or poles (Munger 1916).
>
> ...the entire absence of anything like brush or undergrowth in the forests of fir timber that had sprung up in the midst of large plains, looking at a distance like green islands, here and there dotting the vast expanse of vision (James Neall, 1888, describing the summit of the

> Siskiyou Mountains, near Sterling Peak in Siskiyou National Forest in south-west Oregon).
>
> At the time, there was not a bush or a tree to be seen on all those hills, for the Indians kept it burned over every spring, but when the whites came, they stopped the fires for it destroyed the grass, and then the young spruces sprung up and grew as we now see them (Vaughn 1890).

Gifford Pinchot observed the effects of forest change in 1899:

> Where such forest lands have been protected from fire, as they are very largely through the progress of settlement, young trees have usually sprung up in great numbers under or between the scattered veterans which had survived the fires, and a dense and vigorous young growth stands ready to replace, by a heavy forest, the open park-like condition which the fire had created and maintained (Pinchot 1899).

Abbott Kinney saw the situation in 1900 and concluded:

> We cannot but believe that the present features of forest reproduction in the Sierra have existed since the species of trees now prevailing existed. From this we can realise the time of the process likely to have been necessary to produce the present Sierra Navada forest. A confirmation of the opinion that the open meadows and park-like forests of the Sierra were produced by Indian burning of the forests is found in the oak openings of the central western states, including Tennessee and Kentucky. When the Indians were driven out and annual fires set by them late in the fall in these oak openings ceased, the openings grew up to forest just like other surrounding woods. The strong reproductive power of the Sierra Navada forest, especially throughout the main timber belt, and the way the young trees come up when sheep and fires are kept out, particularly force the opinion upon us that the open mountain meadow and open forest are the result of man's work (Kinney 1900).

Two events are significant when considering modern-day National Forests. The first occurred during 1851 when the US Congress decided to force Native Americans off their land and onto reservations. This decision removed so-called 'native fire' from the western USA landscape. It is widely recognised that tree numbers in the National Forests commenced to increase following the 1851 decision. The second occurred on the night of 20 August 1910 when a very intense and destructive fire crossed the continental divide from Idaho into Montana. In two days fires from perhaps a thousand lightning strikes and numerous other ignition sources merged into one conflagration and destroyed a million hectares of National Forest. This

1910 fire killed 86 firefighters and prompted a national debate on fire policy. An outraged nation demanded that Congress put the US Forest Service 'in the fire-fighting business'. That commenced the 'exclude fire' policy that has had disastrous environmental consequences in the fire dependent ecosystems that occur on much of the National Forest system of western USA (Petersen 1994; Pyne 1994).

The impacts of the two decisions were noticeable during the 1930s. By the 1950s, in eastern Washington the fire-resistant ponderosa pine (*Pinus ponderosa*) was being lost in a sea of the more shade tolerant firs, mostly *Abies* species). Open forests were closing in and the big pines, said to have been so far apart that the forests were more like open woodlands, were dying. Range grass was disappearing. In some forests more than three thousand firs could be counted where about thirty or so big Ponderosa stood. And now the firs are dying, killed by their own prolific growth (*Evergreen* 2000a; Sneeuwjagt 2000).

Aggressive fire suppression under the exclude fire policy had the sanction of those whose education base was in European forestry. It was considered that fire had no place in forest management. Those who had very little history or experience of fire assumed that free-burning fire could be suppressed and, if necessary, eradicated (Pyne 1994). Controlled 'light' burning, 'Paiuté Forestry' was considered 'the Indian way'. Folk philosophers could not compete with academic science. Many firefighters had been killed by wildfires and fire fighting was likened to war (Pyne 1997). The suggestion that hostile fire was somehow friendly fire, that the philosophy of firefighting was wrong, seemed not only ignorant but traitorous. Fatalities hardened ideology and to question public policy was to question the 'private sacrifices of the dead' (Pyne 1994). The problem was fire and the solution was less of it, not more.

Environmental consequences

A result of the exclude fire policy and less fire is that there are very high proportions of dead and dying trees in the forests of western North America. Dense dark stands have resulted in large numbers of trees struggling to compete. Tree stress has allowed successful insect attack, which has resulted in accumulations of debris—'ladders of debris'—which has resulted in buildups in insect numbers to plague proportions. Millions of hectares are succumbing to insect and disease infestations. Insects killing trees means more debris and more insects and more tree deaths spreading over the landscape. Woody debris accumulation, often metres deep, is proliferating insect

numbers and diseases and fuelling some of the largest and most destructive fires ever recorded (Sneeuwjagt 2000).

Buildup of fuels

In the USA the funding of fire fighting comes through the *Emergency Act 1908* which authorises the Forest Service to spend whatever is necessary to combat emergencies. But money has not kept fires from starting or large fires from breaking loose. The Yellowstone fire of 1988 resulted in the expenditure of $US130 million with no appreciable effect on fire size or fire behaviour (Pyne 1994). The environmental tragedy in the USA has not been that wildfires have been suppressed, but that controlled fires are no longer kindled. The exclusion of fire has, in many regions, catalysed a crisis in biotic health. One manifestation has been a catastrophic buildup of fuels. As was seen during the northern autumn of 2000, more fires burnt at higher intensities than in the past, even during relatively mild weather conditions.

Since 1910 there has been a failure in the USA to balance the fire suppression program with an equally ambitious prescribed burning program. There has been a lack of recognition that the periodic use of fire will make the fire fighting job easier by reducing the fuel buildups that lead to very large, very dangerous fires like those experienced during 2000.

Prescribed fire

In the USA fire is no longer seen exclusively as the enemy of forests and there is now a growing agreed need to determine how to allow fire to more readily play its natural role in the country's forest ecosystems. Separating good fires from bad fires is not going to be easy and it will be just as difficult to explain the difference to a public long ago convinced that there is no such thing as a good forest fire. Moreover, any attempt to impose or restore a different fire regime will have to operate within ever-shrinking margins. The cost of reintroducing fire into millions of hectares of public parks and forests would be astronomical. The Blue Mountains in eastern Oregon are seemingly one of the sickest forest areas on the continent with hundreds of thousands of hectares of dead and dying trees (see Northwest Forest Resource Council 1994). The fire rehabilitation of these Mountains alone calls for 50 000 hectares to be burnt each year.

Social circumstances too are worsening. Pressures on the public lands have intensified. The vanishing rural landscape has removed a once useful buffer and studded it with houses—still more fuel and more critics of any policy other than all-out firefighting. Legal liabilities for escaped fires, air

quality standards, endangered species considerations and impassioned interest groups are ever extending the fire management 'gridlock'.

Controlled burning, or light-burning (Paiuté forestry) is not a new concept in the USA. It has been advocated and practiced for over 100 years —and thousands of years by the Native Americans—as a means of decreasing the impact of wildfires, improving forest health and maintaining ecological diversity. However, American foresters of the early 1900s, with their education based on European systems, refused to admit that frontier laissez-faire fire practices could substitute for systematic fire protection under the direction of expert foresters. Also, to the embarrassment of the advocates of light burning, on the day of the great 1910 fire, a deliberately lit fire got away and burnt 14 000 hectares of northern California.

For many years the Forest Service did not support controlled burning, seemingly it was threatened by the concept. It was not until the 1970s, when the merits of the practice became evident in managing south-east pine forests which were largely on private property. Favourable comments began to appear and the Forest Service itself began to support and advocate what by then was called 'prescribed fire' (Pyne 1982).

In recent years there has been two types of response to the problem of reintroducing fire to USA forests: a let burn response and a prescribed burn response. The let burn response, while recognising that natural conditions do not prevail—there being unnatural fuel build-ups and unnatural barriers in the form of roads and property boundaries and so on—allows some fires to run in wilderness and natural areas. The let burn response is not really to let all fires burn but, when appropriate, an attempt to allow fire to more nearly play its natural role. Fires are not just left to burn out, they are managed, particularly 'early season' fires. Early season fires are being allowed to reduce fuels in wilderness and natural areas. A basic requirement is to establish a secure boundary around such fires before conditions deteriorate.

The prescribed burn response allows that in production forest areas, where the object is to restore sustainability, a varying number of larger trees are retained and protected as future crops or as seed sources, while the rest of the stand, often the more shade tolerant species, is removed or thinned by logging after which the area is burnt under controlled conditions. Prescribed fires decrease fuel loads, recycle nutrients, open up stands, improve seedbeds and give advantage to the more shade intolerant species, ground cover and the understorey. In many areas re-establishing diversity is re-establishing grass species for grazing deer and elk.

Research

In Eastern Oregon's Blue Mountains, half of the area's National Forests—1 250 000 hectares of 2 500 000 hectares—are severely affected by spruce budworm *(Choristoneura occidentalis)* and various bark beetles (*Denroctonus* spp.). However, private forests and State-owned forests that are mostly surrounded by the National Forests, are virtually free of the outbreaks. Large areas of the National Forests have been set aside from logging, whereas the private and State forests have tended to be more intensely managed. These latter forests have been regularly logged, silviculturally treated and the stands are relatively young. It is clearly demonstrated by the area's forests that the application of basic management techniques such as thinning and salvage logging, can improve forest ecosystem health and at the same time reduce the loss of resources to intensive wildfire. The local private forest owners boast of having the most productive fish spawning streams in the western states and of having large areas of second growth forests with substantial populations of spotted owls.

For many years the spotted owl was the adopted symbol of forest conservation in the USA, particularly by those groups advocating the cessation of logging and the preservation of old growth forests. It was stated that spotted owls were reliant on old-growth forests for breeding, that old-growth was critical habitat essential to the conservation of the species. The Hoopa Indian Reservation in north-west California is 30 000 hectares of managed regrowth forests. It was the high numbers of spotted owls in the Hoopa forests that put the first dint in the link between spotted owls and old growth and between old growth and ecosystem diversity. Forest scientists have developed detailed descriptions of management activities that can accelerate the development of suitable owl habitat in young regrowth stands (US Fish and Wildlife Service 1992).

In Idaho a scientific team established in 1989 concluded after a two year study that managed forests appeared to be healthier than unmanaged forests (as is the case in Oregon, most 'managed' forests in Idaho are privately owned or belong to states or counties—most of what is 'unmanaged' is federally owned). Subsequently the team also concluded that forest management practices could be used to modify unhealthy forest stand conditions while protecting other forest values (Evergreen 1994). There was not a lot of public support for the concept. Environmentalists stated that the forest health issue was an industry invention and was nothing more than a trumped up excuse to cut more trees.

However, in subsequent years the forest health issue has begun to move. All over the western states research trials have been initiated to determine and demonstrate the results of salvage logging, thinning and prescribed burning. Before and after photographs are being widely displayed. They show dying stands, logging of dead trees and thinning of dense stands, logged areas being prescribed burnt and spaced stands with deer grazing on induced grassed and herb areas.

In Western Montana experiments seem to indicate that the National Forest timber-harvesting program may soon consist mainly of repeated, large-scale thinning designed to reduce stand density and thus the risk of wildfire. By eliminating large amounts of fire-sensitive fir, the aim is to stimulate growth and naturally re-seed the fire-dependent ponderosa pine and western larch (*Larix occidentalis*), species that dominated the region for eons before the Forest Service went into the fire fighting business in 1911.

In Alaska, on the Kenai Peninsula, where trees are not allowed to be harvested but Moose are allowed to be hunted, thousands of hectares of forests are being killed by spruce bark beetle (*Dendroctonus rufipennis*). Indications are that under natural conditions (pre-European settlement) trees did not reach a great age. Fires cycled through the countryside, determining forest types, stand structure, species distribution and growth rates. Trees are now growing 'old' and the bark beetle is taking advantage of the situation (Burnside 1994). It has been recognised that in Alaska a combination of dry summer conditions and lightning strikes meant that fire occurred very regularly, covered large areas and established a mosaic of burns/stand ages over broad areas with the more recent burns limiting the spread of a new fire. Forests were kept relatively young by fires. That is no longer the situation. Many fires are now being put out when relatively small and the beetles are attacking the resulting dense 'oldish' unnatural stands.

Trial thinnings have been carried out in the Kenai forests reducing stand basal area by about 50 per cent. The thinning is inducing growth on retained trees. Also, it is inducing poplar and aspen regeneration and the rejuvenation of the ground cover and the low brush layer (canberrys), which is good for Moose. Some trials include pruning retained trees. Debris is heaped for burning with black plastic sheets placed over parts of the heaps to prevent freezing and hence aid ignition (Kruse and Pelz 1991).

In northern Arizona, along the north and south rims of the Grand Canyon, the National Park Service has considered the unthinkable— logging in a National Park. In an attempt to learn how to return the dying forests to their natural healthy state and eliminate the danger of catastrophic fire the

Park Service is proposing a test that will involve the mechanical thinning of 32 hectares. An estimated 16 000 trees will be removed (Evergreen 2000b).

One problem in the southern Rockies is that there are no sawmills left that are able to process large volumes of small logs. One environmental group, the Grand Canyon Trust has actively searched for markets for small logs removed from a pilot thinning in Coconino National Forest but the region's few remaining sawmills are unwilling to invest in small log technology in the current political situation (I do not know if the Trust has had any success). Unless attitudes change, restoration forestry in these USA southwest areas will remain a distant dream.

Forest management dilemma

The US and Canada are faced with a forest management dilemma; to log or not to log, to control fires or let fires burn, to salvage log or not salvage log, to thin or not thin, to prescribe burn or not prescribe burn. The traditional conservation groups are opposed to any logging and are supporting a total ban on logging in US National Forests, the 'zero cut' situation. These groups also advocate that fires that occur on the forests, parks and reserves should be allowed to let run as a means of replacing diseased forests and restoring stand health and diversity. However, there is increasing recognition in the US that dense dark stands might give advantage to some species, including the destructive budworms and bark beetles, but these conditions do not advantage the open forest species, the grasses and herbs, the deer and elk and the hundreds or thousands of species traditionally associated with the forests. Also, there is increasing recognition that intense wild fires cause immeasurable damage to riparian strips and streams and salmon spawning habitat. Further, there is increasing recognition that for the last 12 000 years or so, the period since the last ice-age—the life span of the forest associations—North American peoples have impacted on and modified the forest stands. That they had a huge impact on the condition and appearance of the forests is becoming more generally accepted. Old records and photographs are showing that the 'natural' North American forest is a patchwork of clumps of trees and grasslands, or open woodlands and savannas or open spaced young forest or mature forests or old forests, all maintained by regular lightning strikes or Indian burning.

Efforts to restore the health of the western USA National Forests by thinning and prescribed burning are expanding. Trials are being diversified and advocated by wider sections of the community, including some conservation groups. As the results of these trials are seen and understood by more

and more people, the future of the National Forests and the National Parks is brightening. But the plans have shocked the traditional conservationists and the proponents of a 'zero cut' in the forests. Court cases and bans on logging are continuing.

Recently the traditional conservationists have introduced the greenhouse argument that the increase in temperature is allowing the insects to increase their numbers and expand their activities. But there are no indications of the insects traditionally being more active in hotter areas or of species moving into cooler areas. The insects have always been where they are now; it is their food supply that has changed. In a recent note to me, Jim Peterson of *Evergreen* Magazine states:

> When discussing the use of prescribed fire as a vegetation management tool, it is important for you to understand that across MOST of the federally-owned national forests [in the western US] it is MUCH too late to safely apply fire. Woody debris accumulations [sometimes knee-deep] are, ironically, an unintended consequence of a near-century of excluding wildfire. This public policy still enjoys wide support, no doubt because most Americans still equate wildfire with waste and destruction. Because the risk of escapement is much too high, prescribed fire is no longer a safe silvicultural tool in the West's national forests. Thinning is our only alternative, but radical environmentalists have so much political capital invested in their 'zero cut' campaign they can't afford to endorse mechanical thinning, even though many of them privately concede it is the only realistic hope for averting catastropic wildfire in at-risk forests.'

Meanwhile, those who know first hand what big fires can do privately await 'a teaching event', the million hectare fire that they believe is inevitable.

> When it comes CNN will provide viewers with a ringside seat... Flames will fill screens, smoke will fill western skies, borate bombers will swoop down mountain ridges, yellow-jacketed firefighters will take their places on fire lines, homes will be evacuated and millions of tax payers dollars will pour into rural staging areas that will be glad for the business. Hundreds of thousands of hectares of wildlife habitat will be incinerated in firestorms, 400 year old Ponderosas will explode like roman candles, creeks will run black with ash and mud, fish will suffocate, birds will be fried alive and terrified deer will race by – on fire. And someone on the fire line will likely go home in a body bag. 'Zero Cut' in real time (*Evergreen* 2000a, p. 29).

Until recent years there were well-based fire management and prescribed burning programs in place in Australia. These have now largely lost general

acceptance. Australia it seems is heading for the USA 1910 no burn situation. Hopefully it will not take 80 years to reverse such management. It is sobering to think that Australia might be heading for 'a teaching event'.

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This is the fifth volume in a series that records Australian forest history across time, place, topic and approach.

Forest history embraces the interactions between people and forests or woodlands. It is concerned with Aboriginal use and management, fire regimes and environmental change. It takes the struggles for forestry and conservation as important themes and investigates the forest industries, their transport networks and forest settlements as well as the creation, use and defence of national parks. Heritage studies, social histories, biographies and policy studies are among the many approaches that are taken.

Eight chapters in this volume deal with Tasmania's rich forest history: its exploration, its parks and conservation reserves, and its wood-using industries. Nine chapters deal with ecological change, struggles for conservation, heritage preservation and much else in the forests of the other States. International themes in forest history, labour history and the march of science from nineteenth century botany to the recent discovery of the Wollemi pine are discussed another twelve chapters.

The authors' varied approaches reveal the diversity and historical patterning of the forests in ways that deepen our understanding of these important ecosystems.