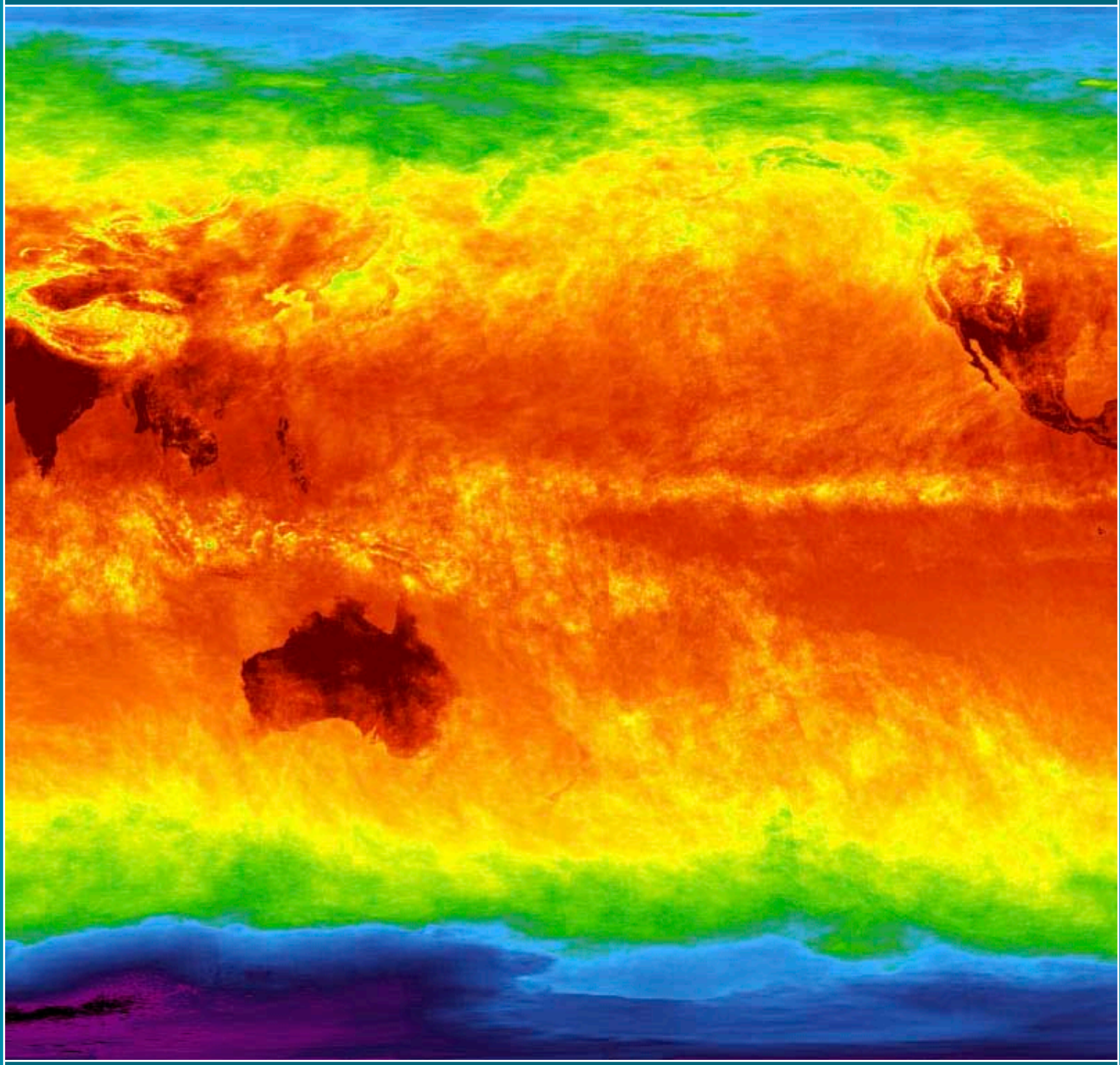
THE FENNER SCHOOL OF ENVIRONMENT & SOCIETY

THE AUSTRALIAN NATIONAL UNIVERSITY

YEARBOOK 2008



ANU COLLEGE OF MEDICINE, BIOLOGY & ENVIRONMENT

http://fennerschool.anu.edu.au

The Fenner School of Environment and Society
Yearbook 2008

Cover:
Fenner School teaching and research focuses on the relationships between people and the environment: how societies shape and are shaped by the environment, how societies manage and use natural resources, and how people impact on the environment. Research and teaching at the Fenner School draws on both the natural and social sciences to address the challenges of sustainability.

This dramatic image of Global Temperature, "temperature_airs_200304_lrg.jpg", is from the NASA website, http://visibleearth.nasa.gov/view_detail.php?id=16467

Yearbook Photos:
Sincere thanks to the many students and staff who contributed photos to this Yearbook.

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Debbie Claridge, Steve Leahy

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It is a pleasure to present the 2008 Yearbook for the Fenner School of Environment and Society.

The Fenner School of Environment and Society is a new academic unit of The Australian National University, formed in February 2007. Bringing together the Centre for Resource and Environmental Studies (CRES) and the School of Resources, Environment and Society (SRES), our aim is to build and sustain a world-class, nationally distinctive School at ANU for interdisciplinary research and education on complex environment-society systems.

This Yearbook introduces the School's staff and graduate students and their work over the past year, and overviews the School's research and teaching programs.

'The Fenner School is unique in Australia. There are very few places in the world where economists and hydrologists, historians and ecologists, foresters, geographers and climatologists work together towards common objectives.'

Our staff, students and graduates work together in world-leading research endeavours and in undergraduate and graduate coursework programs to help governments, businesses, communities and individuals meet the many challenges of working towards sustainability.

The School's research and teaching programs have been aligned around a common set of four themes

- Global change
- Integrative theory, methods and applications
- Landscapes, water and biodiversity
- People in environments

In 2008, Fenner School staff maintained their exemplary publications record and award winning interdisciplinary research involving collaboration with a wide range of external partners. One of our collaborative research teams was awarded the Sherman Eureka Prize for Environmental Research in 2008.

Our teaching and learning programs continue to evolve, and are nationally recognised for their quality and innovation. The School introduced its nationally distinctive Bachelor of Interdisciplinary Studies in 2006 and the interdisciplinary Master of Environment in 2007. Our Teaching staff also won three national teaching awards in 2007.

These rapidly growing programs are being supplemented in 2009 by the new Master of Climate Change. This course aims to prepare skilled professionals to deal with this challenge. Students can tailor the degree to their individual interests and skills and study within a variety of fields, ranging from climate science, to natural resource management, to policy and governance perspectives.

A large and vigorous research training program at the PhD level remains central to Fenner School activities. This builds on our award winning undergraduate program and the extensive links our staff have with Australian industry and government. At the undergraduate level, the School offers BA, BSc, BInterdisciplinary Studies (Sustainability), BSc(Forestry), BSc(Resource and Environmental Management) and many associated joint degrees.

If the work of the Fenner School sparks your interest in research or in collaborative learning, please contact us. We look forward to working with you to address the challenges of sustainability.

Professor Mike Hutchinson
Interim Director

Professor Stephen Dovers
Director-Elect

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Administration and Reception
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Geography Building
Building 48A, Linnaeus Way
The Australian National University

Hancock Building
W.K. Hancock West Building 43
Floors 4, 5 and 6
Biology Place
The Australian National University

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FOR FURTHER INFORMATION

ANU Environment Portal — **cmbe.anu.edu.au/portals/enviro/**

Fenner School College Affiliations

- ANU College of Medicine, Biology & Environment — cmbe.anu.edu.au/
- ANU College of Arts and Social Sciences — cass.anu.edu.au/
- ANU College of Physical Sciences — cops.anu.edu.au/
- ANU College of Science (legacy page) — cos.anu.edu.au/

Prospective undergraduate and graduate students

- ANU *Studyat* website — **studyat.anu.edu.au/**
- ANU Undergraduate Handbook — **www.anu.edu.au/sas/handbook**
- Undergraduate and Honours
  - Handbooks and Program Fact Sheets — **fennerschool.anu.edu.au/studying/prinfo**
  (Forestry, Geography, Human Ecology, Resource & Environmental Management, and Sustainability)
- ANU Graduate Coursework Guide — **studyat.anu.edu.au/graduate_coursework.html**
- ANU Graduate Studies in Environment (including Resource Management) and — info.anu.edu.au/StudyAt/_Graduate_School/Study_Fields/_environment/index.asp
- ANU Graduate Studies in Geographical Sciences — **info.anu.edu.au/StudyAt/_Graduate_School/Study_Fields/_geography/index.asp**

fennerschool.anu.edu.au

Some of the School's new graduate students on an introductory field class

The Fenner School of Environment and Society - an introduction

Environmental Challenges

The complexity, magnitude and urgency of the environmental challenges which contemporary societies face have become widely appreciated only in the past decade, particularly as the impacts of climate change have become more apparent. But they were anticipated 35 years ago at the Australian National University, when Professor Frank Fenner – the famous Australian scientist whose achievements included the eradication of smallpox and the development of myxomatosis – was appointed Foundation Director of a new Centre for Resources and Environmental Studies.

Frank Fenner's distinguished scientific work was paralleled by a deep interest in the environment, and a realisation that pressure on the environment and resources could only be fully understood by drawing on and integrating the strengths of different disciplines. He began by appointing an economist, a systems modeller, and a human ecologist to work with him; today's Fenner School of Environment and Society at ANU has grown from those foundations, to an academic community of more than 60 staff, 100 PhD scholars, 50 graduate coursework students, and 170 undergraduates.

Why is interdisciplinarity important?

Universities and research institutions such as CSIRO were established around disciplines – bodies of knowledge and discourse focused on particular topics, like anthropology, chemistry or physics. A disciplinary focus is very effective at enabling progress within disciplines, but not at tackling complex real-world problems. One reason for this is, as Albert Einstein observed, that "we can't solve today's problems by thinking the way we thought when we created the problem"; another - as Ian Lowe, President of the Australian Conservation Foundation, has commented – is that an overemphasis on disciplinary science leads to "islands of understanding in oceans of ignorance", when the nature of many contemporary problems means that "science needs a fundamentally different approach if we are to achieve our goal of sustainability".

While most universities and research institutes remain structured around disciplinary knowledge, many have now recognised that they need to create vehicles for interdisciplinary work. These initiatives vary in name and scale, from nationwide efforts such as CSIRO's Flagships to those at individual universities, such as the Fenner School. The recent rise of these initiatives reminds us how far ahead of their time Frank Fenner and the ANU were in 1973.

What makes the Fenner School special?

Despite greater recognition of the interdisciplinarity imperative, there are still very few places in the world where work across disciplinary boundaries is core business. The Fenner School of Environment and Society is one of these – because that's how it was conceived, how it is structured, and how it conducts its work in research and education. The Fenner School was established in 2007 under the leadership of Professor Will Steffen, who works closely with its closest European comparator, the Stockholm Resilience Centre. He and his ANU colleagues recognised the opportunity to consolidate the university's strengths in environment and society in a new school, structured around co-located academic staff, PhD scholars and coursework students, all of whom are committed to interdisciplinary research and learning relevant to real-world challenges.

Amongst the School's staff are artists, climate scientists, historians, economists, foresters, geographers, ecologists, hydrologists, lawyers, modellers, statisticians and systems thinkers. They include some of Australia's most-respected academics, in both research and teaching. The School's PhD scholars are even more diverse; many of them choose to join the School in the midst of successful careers, bringing with them invaluable professional experience and networks. The School's graduate and undergraduate coursework students come to ANU from around Australia and the Asia-Pacific region to pursue degrees in the arts, sciences and sustainability; the diversity of degree structures allows students with a variety of interests and strengths to engage with the challenges of sustainability in ways in which they can be most effective change agents.

How does the Fenner School work?

The Fenner School's research and education programs are organised around four themes. Two of these – global change and sustainable landscapes – focus on the science that informs our understanding of environments, and how they are changing in response to the impacts of contemporary society. The third theme focuses on understanding and influencing the relationships between people and environment, and the fourth on how we most effectively integrate knowledge and learning across disciplinary domains – to better connect Ian Lowe's "islands of understanding".

Within this framework, staff and scholars form dynamic research and teaching teams around particular issues - often in partnership with colleagues from other universities, business and government, around Australia and internationally – to tackle projects that demand interdisciplinary collaboration. These vary in scale and scope – current examples include the management of coastal lakes, the restoration of biodiversity in rural landscapes, how to connect Aboriginal and ecological knowledge to conserve endangered species, how to reduce cities' carbon footprints, or how to develop a next generation sustainability curriculum. The most important outcomes of these projects are consolidated and communicated to a wider audience, often in landmark publications such as the recent "Ten Commitments" or the 2003 "Australia Burning", and incorporated into new degree programs such as the Master of Climate Change and the Bachelor of Interdisciplinary Studies (Sustainability).

Staff also work together to create and deliver interdisciplinary courses to undergraduate and graduate students – for example, in climate vulnerability and adaptation, science for environmental decision-making, or integrative research methods. These courses both draw from the School's research projects, and provide opportunities for students to work with the research teams.

The School's education programs are also designed to capitalise on the strengths of our students: the diversity of their cultural and educational backgrounds, life experiences and world views. Excellent educational infrastructure and small class sizes, course structures that emphasize teamwork and peer-supported learning, easy access to a diversity of urban and rural environments, and the university's location in the national capital all contribute to unparalleled opportunities for student learning.

The result is an academic community that works – to enable learning, to generate knowledge, and to connect that learning and knowledge to the big environment-society challenges we face, in ways that make a difference.

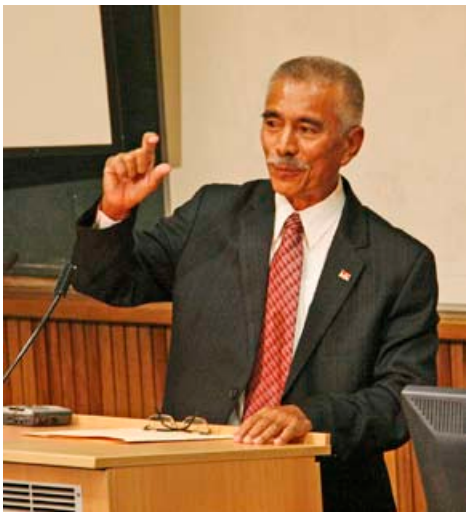
What's the future?

In 2007, a large group of Fenner School staff worked together to explore how different disciplines now understand sustainability, and what that meant for the sustainability agenda. The article they wrote as a result, "Mind the sustainability gap" (Trends in Ecology and Evolution Vol 22), suggested practical actions for academics, natural resource managers, and policy makers to help close what the authors identified as a widening gap between sustainability aspirations and outcomes.

Their work confirmed the importance of integration across academic disciplines to closing that gap, but equally the importance of integrating academic insights with societal action. The latter challenge is one to which the Fenner School of Environment and Society will increasingly turn its attention.

Professor Peter Kanowski
Deputy Director 2008

http://fennerschool.anu.edu.au



Kiribati President Anote Tong

The President of Kiribati said his country is destined to become uninhabitable due to ocean-level rise in a frank address at the ANU Fenner School of Environment and Society.

His Excellency Anote Tong called on Australia and the rest of the international community to help provide skills training to his people so that they would be more attractive as migrants.

The leader of the central Pacific nation said he was resigned to the fact that a changing climate and rising sea levels spelled the eventual demise of the island and low-lying atolls of his homeland.

"Our destiny is sealed," he said, adding that the only options available to his people were to "drown or be relocated".

The President objected to his people being labelled environmental refugees, saying that the term came with a stigma that robbed the I-Kiribati of dignity.

He lamented the fact that the plight of polar bears in a changing climate received more media attention than Islander peoples, but said he was hopeful that the people of Kiribati would be able to relocate and integrate into receptive countries around the Pacific Rim.

Simon Couper, Media Officer (ANU Senior Writer/Editor)

'Future of the Past' symposium

Participants at 'The Future of the Past' symposium on environmental and forest history held in May to mark 20 years of collaboration between the Fenner School of Environment and Society and the Australian Forest History Society. Collaboration started when the first national conference on Australian Forest History was held in what was then the Centre for Resource and Environmental Studies in May 1988. That conference was linked to another 'first' – a conference on the history of tropical forests in the Asia-Pacific region, held immediately afterwards.

The collaborations across disciplines and institutions that started then have flourished across Australia, New Zealand and other countries. They have made the Fenner School a leading institution in both forest history and more broadly in environmental history.

Dr John Dargavel

International Lunch

Students and staff prepare and share foods from their home countries from around the world.

Fenner School table tennis champions

Winner Charles Lowson and runner-up Tingbao Xu celebrate after a hard fought and entertaining final match.

Cricket

The Fenner School cricket team defeated the galant Botany and Zoology crew during a friendly summer cricket match

Staff and Student dinner

Celebrating end of year teaching and study, the Fenner School Staff-Student dinner is always memorable.

Legendary Wednesday morning tea

Staff, students and visitors at the Fenner School weekly all-school morning tea.

MAJOR RESEARCH AWARDS

Fenner School ranked among the top 20 per cent of the world's environmental and ecology research institutions

"The [2008] Essential Science Indicators survey, based on data from 11,000 journals around the world.... The ANU's Fenner School of Environment also scored well, ranking among the top 20 per cent of the world's environmental and ecology research institutions. "

(Quoted from The Canberra Times, 3 September 2008)

Fellow of the Australian Academy of Science

Professor David Lindenmayer was elected a Fellow of the Australian Academy of Science on 19 March 2008 - distinguished for his work on ecology: distribution, abundance and population dynamics of vertebrate populations.

Eureka Prize Winners

Associate Professor Cris Brack, Dr Gary Richards, Dr Jenny Kesteven and Mr Rob Waterworth.

The National Carbon Accounting System (NCAS) team was awarded the $10,000 Sherman Eureka Prize for Environmental Research by the Australian Museum.

Dr Gary Richards from the national Department of Climate Change has been the principal scientist on NCAS for the last decade. He is also a Visiting Fellow at the Fenner School of Environment and Society at ANU.

Associate Professor Cris Brack from the Fenner School was also central to the project. The Eureka Award nomination included the researchers Dr Peter Caccetta, Dr John Raison, Suzanne Furby and Jan Skjemstad from CSIRO, and Dr Jenny Kesteven and Rob Waterworth (both from the Fenner School) from ANU.

(ANU News On Campus: http://news.anu.edu.au/?p=602)

Senior Research Fellowship Land and Water Australia

Professor David Lindenmayer was awarded a 2008 Land and Water Australia Senior Research Fellowship "in recognition of an outstanding contribution to sustainable and productive Australian landscapes".

Australia 2020 Summit Population, Sustainability and Climate Change forum

Emeritus Professor Valerie Brown, Professor Will Steffen (former fenner School Director) and Emeritus Professor Patrick Troy

The Prime Minister of Australia Kevin Rudd convened an Australia 2020 Summit at Parliament House on 19 and 20 April 2008 to help shape a long term strategy for the nation's future.

Of the 86 forum participants from around Australia, we are proud to announce that three were from the Fenner School

Massey Fellowship

Awarded to Dr Libby Robin for distinguished visitor and public lecture at Massey University NZ

TEACHING AND SUPERVISION AWARDS

ANU Vice-Chancellor's 2007 Award for Excellence in Education

Associate Professor Janette Lindesay was awarded a Vice-Chancellor's 2007 Award for Excellence in Education (Awarded April 2008). Janette's citation reads: "[she] demonstrated an exceptional level of stimulation of student interest and an innovative research-led design to curriculum."

A number of other Fenner School staff were nominated finalists forANU and National Teaching Awards. We also congratulate them!

The Fenner School won 2 out of the 3 ANU College of Science 2007 Awards for Teaching Excellence:

ANU College of Science 2007 Award for Excellence in Supervision

Dr Geoff Cary was presented a 2007 ANU College of Science Award for Excellence in Supervision

ANU College of Science 2007 Award for Teaching Excellence

Dr Chris McElhinny was presented a 2007 ANU College of Science Award for Individual Teaching Excellence

AWARDS WON BY OUR UNDERGRADUATE & HONOURS STUDENTS

Australian Institute of Agricultural Science and Technology Prize
Jenn Smits

Jacobs Medal for Outstanding Field Studies in Forestry
Ian Rayner

Schlich Memorial Trust Prize
Matthew Kinny
Ian Scanlan

FENNER SCHOOL RESEARCH & EDUCATION THEMES

These themes reflect the major environmental challenges that face society, plus an additional theme that focuses on the 'how' of interdisciplinary research.

Interdiscipinary Research is a feature of the School's work and provides the methodological underpinning required for integrative research and education.

The Fenner School develops and applies integrative frameworks and methods in ways demanded by the nature of the problems society faces, with the School's research and related educational initiatives proceeding on a project basis where disciplines and individuals work in fluid teams according to the particular task.

1. Holistic approahes to sustainability

Major research and policy problems in environment and sustainability demand contributions from multiple disciplines. The Fenner School's unique breadth of disciplinary expertise is combined with knowledge systems from outside academia, in a variety of research and education initiatives to develop integrative and interdisciplinary capacities needed to solve major sustainability challenges. These initiatives focus on specific problems and methods, as well as span multi-method programs and interdisciplinary theory-building.

- Integrative programs and projects.
- Canberra region sustainability study.
- Theory and practice of integration and interdisciplinarity.

(matches course stream Methods, Approaches and Integrative Practice)

2. Global change

Major sustainability challenges are global in scope, driven by global changes such as climate change, and only addressable through international research, policy and institutional mechanisms. The Fenner School undertakes research and education in the science of global change, adaptation research, the evolution of human-environment relationships, and governance aspects of responses to global change.

- Climate change: science, adaptation and mitigation.
- Extreme events, disasters and emergencies.
- Global environmental governance.
- The Anthropocene: evolution of human-environment relationships.

(matches course stream Global Change Science)

3. Landscapes, water and biodiversity

Increasingly, research and management of ecosystems must integrate across sectors and issues, as evidenced in the emergence of integrated catchment management, biodiversity protection across tenures, and multiple use management of forest resources. The Fenner School undertakes research in landscape sciences, and prepares its graduates to be professional natural resource managers with expertise in:

- Fire science and management
- Forest science and management
- Landscape ecology and conservation biology
- Landscape evolution and soils
- Water science and management.

(matches course stream Landscape Systems and Processes)

4. People in environments

Managing 'the environment' is more about the management of people, understanding human values, and development of appropriate institutions. The Fenner School researches and educates in a range of social science and humanities areas crucial to sustainability, covering social, economic, cultural and policy dimensions. Graduates are prepared for academic and professional lives engaging with the integration of environmental, social and economic values and imperatives, where multiple values and knowledge systems interact in rapidly changing policy settings.

- Ethics, values and perceptions towards nature.
- Environmental policy, law, economics and institutions.
- Human ecology.
- Participatory approaches to knowledge generation.

(matches course stream Social Sciences)



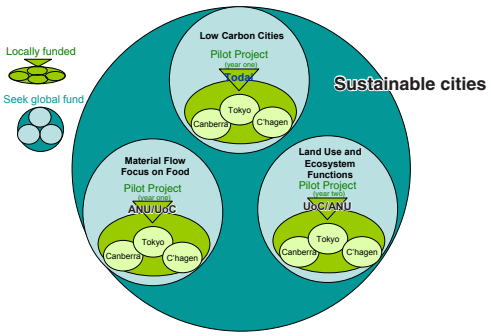

Examples of current research at The Fenner School

Dr Barry Croke (left) testing ground water:
Pogro village, Purulia district, West Bengal, India

Improving livelihood in the East India Plateau

The Fenner School is collaborating in an ACIAR funded project investigating watershed development techniques for improving the livelihood of rural villagers in the East India Plateau. This is one of the poorest regions in India, with a population of almost 30 million. The project is focused on improving agronomic practices, as well as designing water harvesting structures that will improve the availability of water in the dry season. A key component of this study is an investigation of the hydrologic properties of the soils in the study site, as well as monitoring the weather, water storages and discharge out of the catchment. The aim of the hydrological component is to generate guidelines to improve the effectiveness of watershed development, as well as evaluating the impact of such work on downstream users.

Dr Barry Croke



International Alliance of Research University (IARU) Sustainable Cities Demonstration Project

Fenner School staff are working on the Sustainable Cities project with IARU partners in Tokyo and Copenhagen. The project tracks how decisions in one place (such as what to eat) affect landscapes world-wide. One outcome is to reveal the vast global land areas that modern cities command, and how dependent food security is on remote ecosystems' capacity to generate surplus food and other services.

There are three integrated sub-themes. ANU leads Food Flows, estimating the regional carrying capacity of the three partner cities and the surpluses and deficits of traded food. Tokyo leads Low Carbon City, calculating the carbon fluxes the respective cities induce. Copenhagen leads Land Use and Ecosystem Services looking at the net changes in productive capacity of periurban landscapes caused by changing occupancy and use.

The project demonstrates the value of greater IARU collaboration in the future, and the results are important in their own right. They are already generating considerable interest, including future funding avenues, cross-campus collaboration, conference and publication output and participation from research students.

Dr Rob Dyball

Adding deadwood to Mulligans Flat Reserve – a major logistical exercise!

Mulligans Flat – Goorooyarroo Woodland Experiment

This research is a partnership between ANU and the ACT Government. The aim of the project is to understand how we can reverse the decline of biodiversity in box-gum grassy woodlands: a critically endangered ecological community. To do this we have added 2000 tonnes of deadwood, excluded kangaroos and hopefully (climatic condition permitting), in 2009, experimentally burn some experimental sites. We are tracking the response of plants and animals to these treatments, in order to inform woodland management practices. In an exciting new development, a feral-proof fence is being built at Mulligans Flat by the ACT Government. This will add an additional dimension to the experiment, where we will examine the effect of removing exotic predators and competitors and the reintroduction of locally extinct fauna.

Dr Adrian Manning

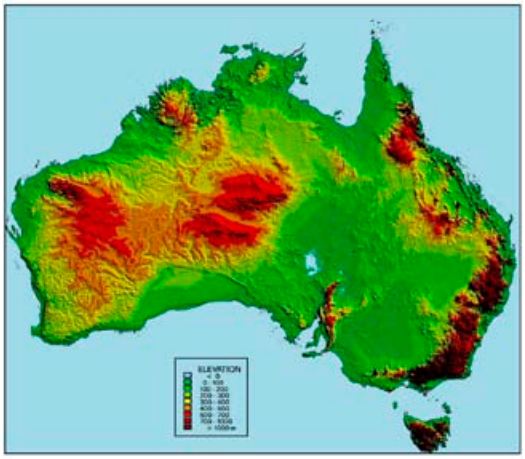
ANU and PNG research partners discussing ACIAR-sponsored fieldwork in the Ramu Valley, PNG

Forests and People

Associate Professor Richard Baker, Dr Hartmut Holzknecht, Professor Peter Kanowski, Dr Jacki Schirmer and around 10 research students are working on the relationships between forests and people in a diversity of contexts, in Australia and the Asia-Pacific region. Much of the Australian work is focused on the social and economic issues associated with plantation afforestation, and is sponsored by the CRC for Forestry. Our international work focuses on improving the livelihoods of small-scale landowners and farmers, and the sustainability of forest conservation and use - by enhancing returns from tree growing, or through better land use strategies. Much of our this work is sponsored by the Australian Government, though ACIAR, and by national governments or international development agencies. We are currently working in Indonesia, PNG, Thailand and Vietnam.

Integrated Catchment Assessment & Management Centre (iCAM)

iCAM undertakes analysis of catchment and water resource-related issues in order to support decision making by catchment managers and policy makers. Issues that have been addressed include assessment of tradeoffs for the sustainability of coastal lake catchments, and allocating water to industry and environmental flows. It also has examined the management of water quality and aquatic ecology, and the interactions between surface and groundwater. iCAM often partners with key Australian institutions at federal, state and local levels including Catchment Management Authorities in three states. Internationally it has worked with Thailand, Indonesian and Indian government agencies and universities. Typical outputs are software and decision support tools to explore the impacts of decisions and these are produced in consort with the involved parties.



New National Elevation Database

Understanding how Australia's precious water drains across the surface of the continent will be dramatically improved thanks to a new national Digital Elevation Model (DEM). The new data will contribute significantly to water accounting, modelling the impacts of climate change projections and a broad range of other applications.

Researchers from The Fenner School and Geoscience Australia have finalised a new version of their GEODATA 9 Second Digital Elevation Model (DEM-9S). Version 3 marks the culmination of more than a decade of work, providing a grid of ground-level elevation points covering the whole of Australia, with a grid spacing of nine seconds in longitude and latitude, or roughly every 250 metres.

The core data underpinning the new database include revised versions of elevation points, streamlines, cliff lines and water-bodies; trigonometric points from the National Geodetic Database; and, additional elevation, streamline and sink point data digitised from source material. The procedure also incorporated major upgrades to the ANUDEM modelling software to improve the representation of streamlines, lakes, cliff lines and the coastline. While there are many locations where higher accuracy data are available, the new product provides the only nationally consistent data for modelling across the entire continent.

Sustainable Farms – Tackling paddock tree loss in grazing areas

In 2007 an ARC Fellowship won by Dr Joern Fischer to investigate the impacts of grazing systems on biodiversity and tree recruitment inspired an integrative project to include the socio-economic aspects of landholder decision-making around vegetation. Launched in 2008, 'Sustainable Farms' is drawing the expertise of existing Fenner staff together and attracting new researchers and research assistants. The key team includes Professor Stephen Dovers, Dr Joern Fischer, Dr Kate Sherren, Dr Helena Clayton, and Dr Jacki Schirmer.

The study area for the project is one million hectares in the upper Lachlan catchment north of Canberra. Including the national parks and state forests within, woody vegetation cover in this area is currently 18%. In its productive lowlands, however, this vegetation is much sparser, and aging quickly. Under ongoing grazing pressure it is unlikely to regenerate, creating the possibility of a future without any trees in areas that aren't excluded from stock.

'Sustainable Farms' aims to identify grazing practices that provide the best chances for tree recruitment, so that landscape-scale restoration can begin in these landscapes. The team will be 1) exploring the costs and benefits for landholders of making the transition to such practices, in terms of biodiversity, short- and long-term farm finance, and cultural and aesthetic preferences; and 2) seeking the means to encourage them where suitable.

Professor Gene Likens and his wife Phyllis at the Fenner School working with Professor David Lindenmayer.

World Class Long-Term Ecological Reserch

Visiting Researcher Professor Gene Likens is working with Professor David Lindermay of the Fenner School to build a world class Long-term Ecological Research (LTER) site in Australia. The USA has a large, ongoing network of 26 Long-term Ecological Research (LTER) sites, in contrast, Australia has a small, informal network of < 10 voluntary LTER sites and no formal LTER network. The absence of an LTER network and any systematic environmental monitoring framework severely limits Australia's ability to assess the effectiveness of ongoing environmental management programs.

Professor Likens is working to identify the key components needed to develop a world-class LTER program and an effective environmental monitoring framework for Australia. The aim of his CERF Fellowship is to inform Australian researchers, policy makers and others about what is involved in the establishment of a formal LTER network and a program of environmental monitoring in Australia.

DEGREE PROGRAMS & COURSES

The Fenner School offers a range of undergraduate and graduate degree programs

- Bachelor and Honours degrees in Forestry, Resource and Environmental Management, and Sustainability
- Geography and Human Ecology programs as part of Bachelor or Honours degrees in Arts or Science
- Coursework graduate programs leading to Graduate Diploma or Master degrees
- Graduate research degrees at Master or PhD level

All programs are available full or part time, and are described in the respective Handbooks, available both on our website http://fennerschool.anu.edu.au and in hard copy from the Fenner School office in building 48.

Students in other degrees can also take our courses to broaden their perspectives on the Big Issues

Start with our foundation courses

- ENVS1001 Resources, Environment and Society: Geography of Sustainability
- ENVS1003 Environment and Society Research Methods
- ENVS1004 Australia's Environment
- ENVS1008 Australia, Asia and the Pacific
- GEOL1006 The Blue Planet

Award Winning Teachers

Our multi-award winning teaching program includes national teaching awards for both courses and lecturers.
In 2006/7 Fenner staff won a record four national Carrick awards, plus the Vice-Chancellor's and an ANU College of Science teaching award.

Vietnam field school

Field teaching at the ANU Coastal Campus, Kioloa

UNDERGRADUATE DEGREES

http://fennerschool.anu.edu.au/studying/undergrad/

1. BA, BSc and associated joint degrees

All courses offered by the Fenner School can be taken as part of a BSc degree, and all Geography and Human Ecology course have status for the BA degree. Geography and Human Ecology courses offer students the opportunity to explore a wide range of human environment issues. The programs

- stress the importance of literacy and numeracy, graphical, verbal and analytical skills, and competence in report preparation and presentation,
- include an integral fieldwork component in most courses.

The Fenner School administers Science Majors in Forest Science, Geography, Human Ecology, and Sustainability Science, and Arts Majors in Environmental Studies, Geography, Human Ecology and Human Sciences.

2. Bachelor of Interdisciplinary Studies (Sustainability)

The three-year BIS (Sustainability) and the four-year direct Honours entry BIS Honours (Sustainability) degrees

- offer students an innovative, interdisciplinary, research-intensive program focused on addressing the challenges of sustainability,
- are structured around core knowledge, learning and research skills, and teamwork,
- require that you develop some knowledge of each of Asia-Pacific, natural and built environments, and the social sciences and humanities,
- allow you to specialise in two majors that span the university's strengths in Asia-Pacific, Arts, Economics and Commerce, Engineering, and Science.

3. BSc (Resource & Environmental Management)

The three-year BSc (ResEnvMan) degree

- offers students the opportunity to develop an individually-structured program which best meets their interests in the environmental sciences and resource management,
- comprises a small core of courses, around which students can develop knowledge of a diverse range of themes, including:
  - environmental policy
  - forest science
  - geographic information systems
  - regolith studies
  - soil conservation and land management
  - sustainable agriculture
  - vegetation management
  - wildlife science
  - land management.

4. BSc(REM) jointly with Bachelor of Laws

The five-year BSc(REM)/LLB degree

- links these two complementary degrees, and is well suited for students wanting to develop careers in the emerging field of environmental regulation.

5. BSc (Forestry)

The four-year BSc (Forestry) degree

- offers students a challenging education in forest science and forest management, with broad application in environmental science and resource management in Australia and abroad,
- is directed primarily to educating forest scientists and professional foresters, but its graduates are also attractive to a wide range of employers in environmental science and resource management.

The curriculum comprises

- the basic physical and biological sciences relevant to forest ecosystems,
- the applied sciences and technologies that support sustainable forest management,
- their application in the context of the political, economic and social dimensions of resource use, emphasises field-based learning, and combines a broadly-based education with specific specialisation opportunities.

6. BSc (Forestry) jointly with BEconomics, BScience, BArts, BArts (Visual), BAsianStudies, BCommerce, BInformationTechnology

These five-year double degrees

- complement and enhance the Forestry program by combining it with a range of disciplines in other degrees, and
- offer graduates particular employment opportunities which capitalise on these complementarities.

7. Honours degrees

Each of the degree or double degree programs can be taken with Honours, requiring

- achievement of sufficient academic standard in coursework, as the basis for admission
- completion of an individual research-based thesis
- an additional year of study, or - for the Forestry program - concurrent enrolment in Honours in the fourth year.

Honours degrees can offer graduates a competitive edge in employment, and direct admission to Master or PhD programs.

GRADUATE DEGREES

http://fennerschool.anu.edu.au/studying/postgrad/
http://fennerschool.anu.edu.au/studying/postgrad/postgrad_courses.php

The Fenner School offers:

a. Coursework-based programs

- Graduate Certificate (one semester of coursework)
- Graduate Diploma (one year of coursework)
- Master (one year of coursework and individual research) in
  - Climate Change [NEW]
  - Environment
  - Environmental Science [NEW]
  - Forestry
  - Geographical Sciences

b. Research-based programs

- Master of Philosophy (two years of individual research)
- PhD (three years of individual research)

NON-DEGREE PROGRAMS

We offer a range of non-degree programs, including workshops, lecture series and short courses, on a variety of topics.

Please contact us for further information

UNDERGRADUATE COURSE GUIDE

Start with our foundation first year courses.
In 2003 and 2006 ENVS1001 won a **national teaching award** and continues to set the standard at ANU.
See our website for more details.

Fenner School 2009 Courses

** ITALICS* - offered biennially: *(year next offered)*

	SOCIAL SCIENCES	METHODS, APPROACHES AND INTEGRATIVE PRACTICE	ENVIRONMENTAL SCIENCES	
THEME	**People and Environment**	**Quantitative, Qualitative and Integrative Methods**	**Global Change Science**	**Landscape Systems and Processes**
Year/semester 1/1	ENVS1001 Resources, Environment and Society: Geography of Sustainability			ENVS1004 Australia's Environment
1/2	ENVS1008 Contemporary issues in Asia and Australia: an introduction to social theory and practice	ENVS1003 Environment and Society Research Methods	EMSC1006 The Blue Planet	
Intensive Courses	ENVS2010 Australia's Forests (Winter Session - July) ENVS2017 Vietnam Field School (Summer Session - January)	ENVS2012 Cities and their Hinterlands (Winter Session - July)		ENVS2008 Hydrology for Natural Resource Management (Summer Session - February)
2/1	ENVS2007 Economics for the Environment	ENVS2011 Human Ecology ENVS2015 Introduction to Remote Sensing & GIS		ENVS2016 Landforms and Soils: Landscape Systems 2 ENVS2019 Vegetation Ecology: Landscape Systems 1
2/2	ENVS2013 Environment and Development: exploring interactions through theory and practice	ENVS2009 Ecological Measurement and Modelling ENVS2014 Qualitative Research Methods for Sustainability	ENVS2004 Weather, Climate and Fire	
Intensive Courses	ENVS3007 Participatory Resource Management: Addressing Environmental Conflict (Winter Session -July +S2) ENVS3033 International Environmental Policy (Summer Session - Feb+April)	ENVS3035 Bayesian Networks for Natural Resource Management (Autumn Session- April-May)	ENVS3026 Geomorphology (Summer Session - February) ** ENVS3001 Climate Change Science and Policy Field School (2009) (Spring Session - 7-18 Dec)*	ENVS3008 Fire in the Environment (Summer Session - February) ENVS3034 Water Quality and Environmental Flow Assessment (Autumn Session- June - July)
3/1	ENVS3028 Environmental Policy and Planning	ENVS3024 Applied Geographic Information Science ENVS3036 Integrative Research Methods	ENVS3029 Palaeo-Environmental Reconstruction	ENVS3005 Water Resource Management ENVS3014 Ecological Restoration & Management
3/2	ENVS3018 Policy and Institutional Analysis in Environment & Sustainability	ENVS3021 Human Futures ENVS3023 Agroecology and Sustainable Systems	** ENVS3013 Climatology (2010)* ** ENVS3020 Climate Change Science and Policy (2009)*	ENVS3002 Soil Resources ENVS3004 Land & Catchment Management

3 — **ENVS3010 Independent Research Projects and ENVS3016 Special Topics are offered in all semesters and all sessions** —

	Forest Science, Policy and Management			
4/1	ENVS4006 Forest Policies and Practices			ENVS4004 Farm and Urban Forestry ** ENVS4007 Forest Conservation and Production Genetics (2010)*
4/2				ENVS4002 Sustainable Forest Management ENVS4003 Sustainable Forest Planning ENVS4008 Forest Products ** ENVS4009 Forest Operations (2010)*

4 — **Honours is Offered in All Fenner School Programs** —

for updates & course descriptions please refer to **http://fennerschool.anu.edu.au/studying/**

Information correct February 2009

FOR THE POSTGRADUATE COURSE GUIDE PLEASE SEE
http://fennerschool.anu.edu.au/studying/postgrad/postgrad_courses.php

UNDERGRADUATE FIELD CLASSES

Field-based learning is one of the strengths of the Fenner Schools' teaching programs, helping students connect theory and practice in partnership with environment and resource management professionals and prospective employers.

Here is a sample from recent Fenner School field courses

Resources, Environment & Society
(ENVS1001)

Fenner School students undertake a forest assessment exercise at Kioloa Coastal Campus that includes mapping the understorey-canopy distribution and performing an analysis of the vegetation history (burning, grazing, and other disturbances).

photos - from top:

Getting to know each other at the start of the course

Reading the forest landscape to understand its management history.

Professor Alistair Greig explaining the settlement history of the south-east Australian coast, on the beach at the Coastal Campus.

Australia's Forests
(ENVS2010)

The Australia's Forests field course is conducted in partnership with public and private land managers on NSW's western slopes and with day visits around the ACT. It introduces students to many of the issues in managing forests and woodlands for conservation and production.

Human Ecology
(ENVS2011)

This course explores the interrelationships between cultures and ecosystems

A favourite component is the extended fieldtrip to Kosciuszko National Park in the Snowy Mountains where these complex issues are experienced first hand

photos - clockwise from left:

Big landscape

Cold but tasty

Significant human impact

UNDERGRADUATE FIELD EXCURSIONS

Vietnam Field School (ENVS2017)

This course explores the development of South East Asia through an intensive two week field school. The emphasis will be on integrating formal learning with first hand experience (fieldtrips, village stay and language training).

Offered jointly by the ANU College of Science, the ANU College of Arts and Social Sciences and the ANU College of Asia and the Pacific.

Water Resource Management
(ENVS3005)

This course emphasises the interdisciplinarity of water resource management and focuses on integrated assessment, which is a method that seeks to solve water management problems by investigating the physical, economic, social and institutional components of a problem.

Environmental Biogeography & Global Ecology
(ENVS3022)

Practicals are based on the application of GIS to modelling plant-climate relations. These computer-based practicals are complemented by field-based investigations

photos:

Measuring tree height and cover abundance in Monga National Park

Environmental Biogeography students hard at work investigating trophic interactions deep in a south coast forest ecosystem.

Honours

An individual research project - structured research training - the path to postgraduate study

photos:

Investigating the role of dingoes in the conservation of endangered fauna through their impact on feral cat and fox populations

Recording GPS locations of the remains of a shepherd's hut in the central highlands of Tasmania.

ANU Staff and Students make their mark at Climate Change Conference (Bali December 2007)

The quality of ANU research and teaching shone at the December 2007 UN Climate Change Conference in Bali, Indonesia.

Professor Ross Garnaut (RSPAS) was part of the Prime Minister's delegation.

Professors Brendan Mackey (Fenner School), Tony McMichael (NCEPH), Luca Tacconi (Crawford School) and Dr Frank Jotzo (College of Asia and the Pacific) contributed to side events, representing the University's leadership in climate change research.

In addition, I was among twelve students from the course "Greenhouse Science and Policy", led by Dr Janette Lindesay of the Fenner School of Environment and Society, who witnessed the historic conference as observers.

ANU observer status to the UNFCCC was secured by the ANU Institute for Environment. Students received competitive scholarships from the Office of the Vice Chancellor to cover expenses.

"It gave tremendous insight into the processes and functions of the UN, as well as the extensive involvement of the private sector", said Peta Margerie, one of the scholarship recipients. "You can't experience this in a uni classroom".

Joining an international community of more than 10,000 delegates, we attended plenary sessions and side events. Each of us pursued our own research topic of interest, which ranged from local renewable energy, climate change and health to the adaptive capacity of communities in the developing world.

We witnessed climate leaders Ban Ki Moon, Yvo De Boer and Al Gore call the world to action. Private audiences with members of the scientific community, UN organisations, lobby groups and negotiators gave us an inside glance of the complexity of the climate policy process. We made numerous contacts with members of the Climate Change community in Australia and worldwide.

Fellow students described the experience as "invaluable" and "enlightening" and for many of us has set a research and career precedent.

Ed Boydell (Fenner School student)

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Building coherent policy frames for agricultural commodity industries

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Career Brief

Judith is an economist, graduating with honours from the School of Economics, University of Melbourne (1978) and a PhD in resource and environmental management from ANU (2002). She has worked in the Australian Bureau of Statistics, Bureau of Industry Economics, Port of Melbourne Authority and the Victorian industry department where she managed manufacturing policy for the Victorian wood based industries. Since entering ANU in 1996, Judith has concentrated her research on building environmentally and economically coherent policy frames for the agricultural sector (notably wood production) recognising the cost-cutting nature of commodity production. Her work is deeply integrative – history, ecology, economics, politics, institutional analysis and policy. Judith used integration to investigate why, despite the existence of a pragmatic solution, Australia has not resolved its forest conflict. Her findings are presented in 'The Forest Wars' (MUP 2007). She is currently working with colleagues on how best to integrate forests in Australia's climate change mitigation policy and is preparing to broaden her research into the food production sector. Judith is a strong advocate for communicating university research and analysis to enhance public policy debates.

Selected Publications

Ajani J. (2008) 'Australia's transition from native forests to plantations: the implications for woodchips, pulpmills, tax breaks and climate change', Agenda: A Journal of Policy Analysis and Reform, 15(3), 2008.

Wood P.D. and Ajani J. (2008), Submission (plus addendum) to the Commonwealth Government on the Carbon Pollution Reduction Scheme Green Paper.

Ajani J. (2007) 'Gunns' double-barrelled dilemma', The Age Opinion & Analysis, 11 October 2007, p. 14.

Ajani J. (2007) 'Ending the forest wars', Australian Review of Public Affairs election 2007 publication.

Ajani J. (2007) 'Rudd's forest policy sees him right alongside the PM', Opinion The Canberra Times 25 July 2007, p. 13.

Ajani J. (2007) The Forest Wars, Melbourne University Press.

Ajani (formerly Clark) J. (2004) 'Forest policy for sustainable commodity wood production: an examination drawing on the Australian experience', Ecological Economics 50, 219-232.

Ajani (formerly Clark) J. (2003) 'A new forest and wood industry policy framework for Australia', Chapter 11 in David Lindenmayer & Jerry Franklin (eds) Towards Forest Sustainability, CSIRO Publishing.

Ajani (formerly Clark) J. (2003) 'Western Australia's forest industry policy: a stocktake', presentation to the Western Australian Cabinet Standing Committee on Protecting Our Old Growth Forests Policy, Perth, Western Australia, 14 April 2003.

Ajani (formerly Clark) J. (2002) The Introduction of Agriculture for Wood Production in Australia: Public Policy Lessons From the Softwood Planting Program, PhD Thesis, The Australian National University.

Ajani (formerly Clark) J. (2001) 'The global wood market, prices and plantation investment: an examination drawing on the Australian experience', Environmental Conservation 28 (1): 53-64.

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Career Brief

Richard was from 1990 to 1993 the inaugural head of the People and the Environment section of the National Museum of Australia. He has taught Geography at ANU since 1994. He was awarded the ANU Vice-Chancellor's award for teaching excellence in 1996 and 2002. The introductory Fenner School course that he coordinates ENVS1001 won a 2003 National Teaching award. In 2006 he won a national Carrick teaching award.

Professional Activities

My teaching at ANU includes coordinating the first year Fenner course "Resources, Environment and Society" (ENVS1001) and the "Vietnam Field School" (ENVS2017) and co-teaching the 3rd year course "Environmental Policy and Planning" (ENVS3028). My research focuses on community participation in resource management and environmental policy. I have worked on these issues in Australia and south-east Asia. I have also worked in Viet Nam with the IUCN (World Conservation Union) on issues related to community participation in wetlands management. My work in Australia has focused on Indigenous communities and land management issues. This has been written up in two books: Land is Life (Allen and Unwin) and Working on Country (Oxford University Press).

Further personal details, links to publications, recent graduate student details and on line articles on teaching methods are available at http://fennerschool.anu.edu.au/people/baker/index.html

Academic Highlights

I have supervised the following recent PhD completions

Sue Feary 2007 – Chain-saw dreaming – Indigenous people and forestry

Tran Ha 2007 – The Impacts of Doi Moi Process on Communities and Forest Land Management in the Nothern Mountainous Region of Vietnam

Geraldine Teakle 2007 - Northern Territory cyclones: a case study of complex social-ecological systems

Kirsten Maclean 2007 - Negotiating environmental knowledge – community attitudes to NRM in Australia

Karen Fisher 2006 - Social politics of water management in the Philippines

Diana James 2006 - Kinship with Country

Selected Publications

Le Heron, R., Baker, R. and McEwen. L. Co-learning: Re-linking Research and Teaching in Geography, Journal of Geography in Higher Education. Oxford: March Vol.30, Iss. 1: 77-88

Measham, T. and R. Baker 2005 Combining People, Place and Learning. Page 91-103 in Keen, M, Brown, V. and Dyball, R. (eds) 2005. Social Learning in Environmental Management: Towards a sustainable future. London: James & James/Earthscan.

Baker, R.M. 2003 Yanyuwa classical burning regimes, Indigenous science and cross-cultural communication, pages 198-204 in Australia burning: fire ecology, policy and management issues CSIRO publishing, Collingwood Victoria ISBN 0 643 0 06926 7

Robinson, C, Liddle, L. and Baker, R.M 2003 Journeys through an Australian Sacred landscape, with, Museum International, 218: 74-77

Baker, R.M., Davies J. and Young, E. (eds) 2001. Working on Country: Contemporary Indigenous Management of Australia's Lands and Coastal Regions, Oxford Uni Press

Baker, R.M. 1999. Land is Life: From Bush to Town - the story of the Yanyuwa people. Allen and Unwin, Sydney

Dr Sam Banks

Post-doctoral Fellow

Conservation biology, population genetics, impacts of landscape variability (e.g. habitat fragmentation) on population biology, marine ecology and genetics

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Career Brief

Sam Banks completed undergraduate degrees in arts and science at Monash University. His honours and postgraduate work were in conservation genetics and the population biology of marsupials. Post-doctoral research at Macquarie University from 2005 to 2007 focused on marine invertebrate ecology and genetics. He commenced a post-doctoral fellowship in the Fenner School in 2007.

Professional Activities

I am interested in conservation and population biology and have used molecular genetics and field ecological approaches in my research. My genetics experience began during my honours and in subsequent work developing non-invasive methods for genetically identifying individual animals and applying these methods to conservation programs for endangered species like the northern hairy-nosed wombat. I went on to complete a PhD focusing on the impacts of habitat fragmentation on the social behaviour and population biology of small marsupial carnivores (Antechinus). I then took a sea change and worked on the genetics of marine invertebrate populations, and how this is influenced by physical oceanic and geographic processes. Since moving to ANU in 2007, I have been researching variation in animal life history strategies in relation to environmental heterogeneity.

Selected Publications

Banks, S.C. et al. 2008. Microhabitat heterogeneity influences offspring sex

allocation and spatial kin structure in possums. Journal of Animal Ecology 77, 1250–1256

Banks et al. 2007. Sex and sociality in a disconnected world: a review of the impacts of habitat fragmentation on animal social interactions. Canadian Journal of Zoology, 85, 1065–1079.

Banks, S.C. et al. 2007. Oceanic variability and coastal topography shape local genetic structure in a long-dispersing marine invertebrate. Ecology, 88, 3055-2064.

Beckman, J. et al. 2007. Phylogeography and environmental correlates of a cap on reproduction: teat number in a small marsupial, Antechinus agilis. Molecular Ecology 16, 1069-1083.

Banks, S.C. et al. 2005. The effects of habitat fragmentation on the social kin structure and mating system of the agile antechinus, Antechinus agilis. Molecular Ecology, 14, 1789-1801.

Dr Sara Beavis

Graduate Convenor for Resources and Environment

Research Fellow

Hydrology, hydrogeology, water resources management

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Professional Activities

Temporal and spatial analysis of anthropogenic disturbances to landscapes and impacts on catchment hydrology and sediments. Inland and coastal acid sulphate soils – with particular reference to sediment physical properties.

Selected Publications

Beavis, S.G., 2000. Structural controls on the orientation of erosion gullies in mid-western New South Wales, Australia. Geomorphology, 33 2000.:59-72

Welch S, Yates G, Higgins A, Wallace L, Kirste D and Beavis S (2006) Experimental results on Sulfur and Salt flux from an inland sulfidic system- The Loveday Basin. CRC LEME Conference Nov 5-9 2006, Handhorf SA

Isaacson L, Kirste D, Beavis S, and Welch S, (2006) Controls of Acid, Salt and Metal Distribution at a Coastal Acid Sulfate Soils Site. CRC LEME Conference Nov 5-9 2006, Handhorf SA

Somerville P, White I, Macdonald B, Welch S and Beavis S (2006) .1 Groundwater and stream water interactions in Widden Brook, Upper Hunter Valley NSW II. CRC LEME Conference Nov 5-9 2006, Handhorf SA

Beavis S, Welch S, Beavis F, Higgins A, Kirste D, Somerville P and Wallace L (2006) The Relationship between wetting and drying cycles and pedal structure, fabric, and mineralogy at the Loveday Lagoon. CRC LEME Conference Nov 5-9 2006, Handhorf SA

Beavis S, Welch S, & Dirk Kirste D (2006) The Relationship between Soil Physical properties and Chemical Fluxes, Loveday Lagoon. CRC LEME Conference Nov 5-9 2006, Handhorf SA

Higgins A, Beavis S, Kirste D, and Welch S (2006) Physicochemical Properties of sediments: Loveday Disposal Basin, South Australia. CRC LEME Conference Nov 5-9 2006,

Wallace L, Welch S, McPhail DC, Kirste D and Beavis S (2006) Preliminary rates of sulfide oxidation under circum-neutral and acidic conditions: Loveday Basin, Lower Murray Floodplains, South Australia Handhorf SA CRC LEME Conference Nov 5-9 2006, Handhorf SA

Tynan S; Opdyke B; Ellis D; Beavis S; Welch S, Kirste D; Wallace L (2006) Interpreting the trace element ratios of freshwater bivalve shells and their application to understand environmental variability. CRC LEME Conference Nov 5-9 2006, Handhorf SA

Somerville P, Welch SA, Beavis S, Kirste D, Kehoe M, Beavis FR, Isaacson L (2006) Spatial and temporal variability of acidity in a coastal acid sulfate soils hotspot. Australian Earth Sciences Convention. Melbourne, Australia, July 3-6 2006

Isaacson L, Kirste D, Welch SA, Beavis S (2006) Acid groundwater dynamics in an ASS backswamp, Mays Swamp, Kempsey NSW. Australian Earth Sciences Convention. Melbourne, Australia, July 3-6 2006

Beavis S, Welch SA, Kirste D, Wallace L, Beavis FR, Somerville P, McPhail DC, (2006), Physical, geochemical and biological controls of S redox chemistry in an inland salt disposal basin. Australian Earth Sciences Convention. Melbourne, Australia, July 3-6 2006

Welch SA , Kirste D, Beavis S, Beavis F, Wallace L, Yates G, (2006) Geochemistry of S in an inland acid sulfate soil system. 16th VM Goldschmidt Conference, Melbourne, Australia Aug 27-Sep1 2006

Dr Cris Brack

Forestry Program Convenor

Associate Professor

Forest Inventory, Forest Mensuration, Carbon Sequestration and Accounting, Forest Modelling, Forest Planning, Urban Forestry

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Career Brief

Cris completed his undergraduate B.Sc.(for)(hons) degree at ANU in 1982 then worked in the biggest plantation district in NSW. After promotion to Forest Inventory Officer, he designed inventories and information systems for NSW. Following a PhD in Canada he returned to Australia as Senior Inventory Officer for State Forests of NSW with responsibility for supporting management of plantations and multiple-use native forests. He joined ANU Forestry in June 1994. Cris has subsequently undertaken extensive research and consultancy work throughout Australia as well as New Zealand, Malaysia, Indonesian, PNG, Germany, South Africa and USA.

Professional Activities

My most significant research contributions have been the development of optimal sampling strategies, modelling tools, and decision-support systems for trees at stand, landscape and continental scales. This research integrates knowledge of and innovation in applied statistics (for model-based and unequal probability sampling), data acquisition (from remotely sensed imagery and ground-based surveys), modelling (of tree and stand dynamics, fauna and flora habitat supply), and expert and decision-support systems (as integrating methods). The research has broad application in both natural and urban environments, and has attracted national and international interest. My work has been influential in development of the Australian Greenhouse Office's National Carbon Accounting System, and in catalysing the development and adoption of new approaches by forest and land managers and policy makers including the Bureau of Resource Sciences, National Forest Inventory, Canberra Parks and Places, Department of Sustainability and Environment (Victoria), Forestry Tasmania and Private Forests Tasmania. I am involved in teaching and learning in all these areas for undergraduates and post-graduates.

I am also active in National and International Research Working Groups on Forest Measurement and Information Systems; Inventories on Successive Occasions; Improving Education and Further Education in Forestry.

During 2008 my research focused on: measuring and reporting on the carbon sequestration at a small scale and national level; determining the environmental and economic value of urban forests; enhancing inventory data collection (including the use of LIDAR and ground-based lasers); tree ring analysis (dendrochronology) and making good management decisions. I continue as a member of the Expert, Independent Advisory Panel to monitor the Department of Sustainability and Environment performance.

Academic Highlights

Winner of the Australian Museum Eureka Award for Environmental Science (2008)

Winner of the Carrick Institute Citation for Outstanding Contributions to Student Learning (2007)

Selected Publications

(see also http://fennerschool-associated.anu.edu.au/mensuration/BRACKPUB.HTM)

Brookhouse, M., Lindesay, J., and Brack, C.L. (2008) The potential of Tree Rings in Eucalyptus pauciflora for Climatological and Hydrological Reconstruction. Geographical Research 46(4): 421 – 434.

Brookhouse, M. and Brack, C.L. (2008) The effect of age and sample position on eucalypt tree-ring width series. Canadian Journal of Forest Research 38: 1144 – 1158.

Roberts, S., Field, J., McElhinny, C. and Brack, C.L. (2008) Doing nothing in dry regrowth forests is not an option. Australian Forest Grower 30(4): 31 – 33.

Ford, A., Brack, C.L. and James, R. (2008) Site Index prediction for Pinus radiata D. Don at local scale on the Southern Tablelands of NSW using a national Forest Productivity Model. Australian Forestry 70(3): 152 – 157.

Wielinga, B., Waterworth, R. and Brack, C.L. (2008) Fertiliser and irrigation effects on wood density at various heights for Pinus radiata. European Journal of Forest Research 127: 63 – 70.

Dr Matthew Brookhouse

Research Fellow

Dendrochronology, alpine ecology and climatology

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Career Brief

Matthew completed a forestry degree with honours at ANU in 1997. His honours research investigated the identification and analysis of tree rings in *Eucalyptus obliqua* and *E. cypellocarpa*. He then joined the Department of Sustainability and Environment (DSE), Victoria, where he focussed on the design and implementation of components of Victoria's Statewide Forest Resource Inventory and forest growth and yield studies. In 2008, Matthew completed a PhD at ANU that focusses on the use of eucalypt tree rings in climatology.

Professional Activities

I am primarily engaged in developing a dendrohydrological reconstruction of river flow in the Thompson catchment on behalf of Melbourne Water. In addition to this work, I am also engaged in research on an invasive weed (*Senna siamea*) in CapeYork and an alpine conifer (*Podocarpus lawrencei*) in NSW and Victoria. In addition to these dendrochronological studies, I am also involved in research on modelling forest structure, as a surrogate for biodiversity, at a landscape level. These research interests, as well as my professional experience in the design and implementation of forest inventories provide the context for my teaching.

Academic Highlights

Due to the potential significance of my work in reconstructing long-term climate histories for Australia, I received a number of awards and grants in the latter part of my PhD. Notable amongst these award was a Department of Agriculture, Forestry and Fisheries/Bureau of Rural Sciences Science and Innovation Award in 2007. This award has furthered my research on historic river flow regimes in the Murrumbidgee and Cotter Rivers.

Selected Publications

Brookhouse, M. (2006). Eucalypt dendrochronology: past, present and potential, Australian Journal of Botany, 54, 435-449.

Brookhouse, M. and Brack, C. (2006). Crossdating and analysis of eucalypt tree rings exhibiting terminal and reverse latewood, Trees: structure and function, 20, 767-781.

Brookhouse, M. and Brack, C. (2008). The effect of age and sample position on eucalypt tree-ring width series, Canadian Journal of Forest Research, 38 (5), 1144-1158

Brookhouse, M., Lindesay, J., and Brack, C. (In press). The climatological and hydrological potential of tree rings in Eucalyptus pauciflora. Geographical Research.

Brookhouse, M., Brack, C., and Bi, H. (submitted). Elevation dependent climate sensitivity in *Eucalyptus pauciflora Sieb. ex Spreng.* tree-ring chronologies. Austral Ecology.

Dr Lyndall Bull

National Forestry Masters Convenor

Lecturer

Forestry especially forest products and innovation

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Career Brief

Lyndall completed her PhD at the University of Melbourne focussing on the commercialisation of wood product innovations. Since that time she has completed a skills audit of the Australian wood and paper products industry and managed the technical division within Timbercorp Forestry. Lyndall joined the Fenner School in June 2008 as lecturer in Forestry and Convenor of the new National Forestry Masters Program.

Selected Publications

Bull, Lyndall., Ferguson, Ian. (2004) "Factors influencing the success of wood product innovation in Australia and New Zealand" Forest Policy and Economics (8) 2006 pp 742 – 750

Bull, L.M., Kelly, M.A. (2002) "International market prospects and the changing structure of the Australian plantation industry" in Australian Forestry, 66 (1)

Bull, L.M, Bren, L.J. (2001) "The socio-economic contributions of a timber mill in a small country town. A case study" in Australian Forestry 64 (2)

Niskanen, A., Lunnan, A. Ota, I, Blatner, K., Herbohn, J., Bull, L., Hickey, G.M. and Ferguson, I. 2007. Policies affecting forestry entrepreneurship. Small-scale Forestry 6(3): 233-255

Dibrell, C., Down, J.T. & Bull, L. Dynamic strategic planning: Achieving strategic flexibility through formalization. Journal of Business and Management, forthcoming.

Dr Geoff Cary

Senior Lecturer

Fire science

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Career Brief

Geoff graduated with BAppSc (Environmental Biology) (Hons), University of Technology Sydney in 1992 and completed his PhD in ecology at ANU in 1998. Since his appointment in 1996, Geoff has been the lecturer in fire science.

Professional Activities

Geoff convenes the 'Fire in the Environment' course and contributes to 'Weather, Climate & Fire' and 'Environmental Biogeography'. Geoff is a researcher in Project B.1.2 of the Bushfire CRC, addressing the effectiveness of varied approaches to managing bushfire risk. He leads projects on the importance of climate change for fire management and carbon dynamics, funded by the NSW Department of Environment and Climate Change and the Australian Greenhouse Office. He co-leads an international group of researchers comparing the behaviour of landscape-fire-succession models, funded by the US National Centre for Environmental Analysis and Synthesis, the Canadian Forest Service and the US National Fire Plan. Geoff is an Associate Editor for the International Journal of Wildland Fire, and a member of the NSW Parks and Wildlife Advisory Council. He also represents ANU on the Bushfire CRC Stakeholder Advisory Council.

Academic Highlights

Geoff was awarded the 2007 ANU College of Science Supervision Award.

Selected Publications

Cary GJ, Flannigan MD, Keane RJ, Bradstock RA, Davies ID, Lenihan JM, Li C, Logan KA, Parson RA (in press) Relative importance of fuel management, ignition management and weather for area burned: Evidence from five landscape-fire-succession models. International Journal of Wildland Fire.

Gardner RH, Jopp F, Cary GJ, and Verburg PH. 2008 World Congress Highlights Need for Action: An Editorial for Landscape Ecology. Landscape Ecology 23: 1-2.

Vivian LM, Cary GJ, Bradstock RA, Gill AM. 2008. Influence of fire severity on the regeneration, recruitment and distribution of eucalypts in the Cotter River Catchment, ACT. Austral Ecology 33: 55-67.

King K, Bradstock R, Cary GJ, Chapman J. and Marsden-Smedley. J. 2008. The relative importance of fine scale fuel mosaics on reducing fire risk. International Journal of Wildland Fire 17: 421-430.

Keane RE, Cary GJ, Davies ID, Flannigan MD, Gardner RH, Lavorel S, Lenihan JM, Li C, Rupp TS. 2007. Understanding global fire dynamics by classifying and comparing spatial models of vegetation and fire dynamics. In (Eds Canadell J, Pataki D, Pitelka L) 'Terrestrial Ecosystems in a Changing World' pp 139-148. (Springer-Verlag, Berlin Heidelberg).

Ms Helena Clayton

Research Fellow

Behavioural economics; social learning; social dimensions of individual choice; volunteerism; agri-environmental policy

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Career Brief

Helena has completed an Honours (UNE) and Masters degree (USYD) in agricultural and resource economics and is currently completing her PhD thesis on the social dimensions of market incentives for environmental management.

Professional Activities

Helena has undertaken policy-oriented research in a range of contexts relating to environmental management in primary production systems, both in Australia and SE Asia. As part of an ACIAR project she investigated policy issues related to the socio-economic drivers of land degradation in the integrated aquaculture systems in southern Vietnam. In her PhD research she has investigated factors that influence biodiversity conservation activities on farms in the broad-acre agricultural regions of Western Australia and Victoria. This research has drawn upon theory from the social psychology to investigate the interactions that might exist between socially-based motivations and market-based incentives for biodiversity conservation.

Academic Highlights

Conducting my PhD research within the multidisciplinary, policy-oriented CRC for Dryland Salinity (now Future Farm Industries CRC).

Selected Publications

Clayton, H and Pannell, D (2006) 'Balancing production, conservation and NRM: socioeconomic considerations in policy design', Paper presented at the Fenner Conference on the Environment, Shine Dome, Canberra, 8-9 November

Clayton, H (2003), 'Bioeconomic factors in sedimentation related land loss in the natural rice-shrimp system', Ch.11, in Nigel Preston and Helena Clayton (eds.) Rice-Shrimp farming in the Mekong Delta: sustainability issues, ACIAR Technical Report No. 52E. ACIAR, Canberra

Brennan, D., Clayton, H., Tran, B. (2000), 'Economic characteristics of extensive shrimp farms in the Mekong Delta', Aquaculture Economic and Management, 4 (3/4)

Dr Barry Croke

Senior Lecturer

joint appointment with MSI

Streamflow and water quality modelling, with particular emphasis on predicting flow in ungauged catchments

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Career Brief

Barry Croke has a BSc in Theoretical Physics and a PhD in Astrophysics from UNSW. He was a post-doctoral fellow in the Physics Department at the University of Crete between April 1994 and September 1996. From September 1996 to June 1999, he was a post-doctoral fellow in the Environmental Research Laboratory at the Foundation for Research and Technology – Hellas, working in the fields of hydrology and atmospheric research. In August 1999 he joined iCAM at the Fenner School as a visiting fellow, and is now a Senior Lecturer in a joint appointment with the Fenner School and the Department of Mathematics.

Professional Activities

My research interests include development of models for prediction of streamflow and water quality. This includes prediction of flow at ungauged sites, which requires techniques for predicting hydrologic response based on catchment attributes such as topography and land use. This involves development of models suitable for such work, as well as exploring the relationships between model parameters and key catchment attributes. In addition, research on modelling water quality is being undertaken including estimation of sediment, nutrient and pathogen exports. A key research component is investigating model response to uncertainty in parameter values and input data through sensitivity analysis. This is an important component of model development due to the sparse nature of environmental datasets. I am one of the co-founders of the Top-Down Modelling Working Group, and was co-leader of Science Theme 6 (development of new model approaches) within the Prediction in Ungauged Basins initiative of the International Association of Hydrological Sciences from April 2005 to July 2007.

Selected Publications

Ferguson C.M., B.F.W. Croke, P.J. Beatson, N.J. Ashbolt, and D.A. Deere, 2007. Development of a process-based model to predict pathogen budgets for the Sydney drinking water catchment, Journal of Water and Health, 5(2), 187-208.

Croke, B.F.W., J.L. Ticehurst, R.A. Letcher, J.P. Norton, L.T.H. Newham, A. J. Jakeman, 2007. Integrated assessment of water resources: Australian experiences, Water Resources Management, 21, 351-373 (doi: 10.1007/s/11269-006-9057-8).

Croke, B.F.W., R.A. Letcher and A.J. Jakeman, 2006. Development of a distributed flow model for underpinning assessment of water allocation options in the Namoi River Basin, Australia, Journal of Hydrology, 319, 51-71 (doi:10.1016/j.jhydrol.2005.07.001).

Croke, B.F.W., 2006. A technique for deriving the average event unit hydrograph from streamflow-only data for quick-flow-dominant catchments, Advances in Water Resources. 29, 493-502 (doi:10.1016/j.advwatres.2005.06.005).

Letcher, R.A., B.F.W. Croke and A.J. Jakeman, 2004. Model development for integrated assessment of water allocation options. Water Resources Research, 40, W05502, doi:10.1029/2003WR002933.

Croke, B.F.W., W.S. Merritt and A.J. Jakeman, 2004. A Dynamic Model for Predicting Hydrologic Response to Land Cover Changes in Gauged and Ungauged Catchments, Journal of Hydrology, 291, 115-131.

Dr Bruce Doran

Lecturer

Geographic Information Systems

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Career Brief

Bruce was born in Swaziland and spent much of his childhood in Zimbabwe and Tanzania, returning to complete his final two years of school in Canberra. He studied at SRES from 1996-2004, completing a BSc(REM) and a PhD. After obtaining his PhD, Bruce moved to a different part of ANU and spent eighteen months as a postdoctoral fellow at the Regulatory Institutions Network (RegNet), within the Research School of Social Sciences (RSSS).

Professional Activities

My initial GIS-based research focused on wildlife management issues. My honours project involved a spatio-temporal investigation of car-kangaroo collisions in the Australian Capital Territory. When undertaking a PhD, I adapted some of the analytical techniques used in my honours research to look into spatio-temporal aspects of the fear of crime in Wollongong, NSW. The focus of the thesis was to develop a GIS-based analytical framework to look at collective responses to fear of crime in the Central Business District of Wollongong. The information resulting from the spatial analysis of fear of crime, in particular mapping the spatio-temporal distribution of collective avoidance behaviour, provided a means of investigating links between fear of crime, disorder and the actual occurrence of crime. Interpreted in relation to The Broken Windows thesis and other "disorder decline" models, the results gave rise to a range of new insights and strategic management implications for the organisations responsible for addressing the problem. As a postdoctoral fellow, I assisted in developing GIS-based methodologies with which to investigate gambling accessibility. At the Fenner School, I aim to continue developing GIS-based approaches to biophysical and social issues through teaching and research initiatives.

My teaching centres around two GIS courses. "Introduction to Remote Sensing and Geographic Information Systems" provides a theoretical background to the area as well as a practical basis for using GIS to assist in decision making. "Applied Geographic Information Systems" exposes continuing students to a more sophisticated range of applications to investigate biophysical and urban problems.

Selected Publications

Doran, B., McMillen, J. and Marshall, D. A GIS-based investigation of gaming venue catchments Forthcoming, Transactions in GIS. 11(4): 575–595

McMillen, J. and Doran, B. 2006. Problem gambling and gaming machine density: Socio-spatial analysis of three Victorian localities, International Gambling Studies, Vol. 6(1).

Doran, B and Lees, B. 2005. Investigating the spatio-temporal links between disorder, crime, and the fear of crime. The Professional Geographer, 57 (1): 1-12.

Olsen, P. and Doran B. 2002. Climatic modelling of the Australian distribution of the grass owl Tyto capensis: is there an inland population? Wildlife Research, 29: 117-125.

Doran, B and Lees, B. 2000. Modelling the ecology of fear: an analysis of car-kangaroo collisions in an urban area, paper presented at the 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4): Problems, Prospects and Research Needs. Banff, Alberta, Canada, September 2 - 8, 2000.

Professor Stephen Dovers

Director-Elect (from March 2009)
Research Convener

Professor

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Career Brief

Steve has degrees in ecology and geography and a PhD in environmental policy. Prior to entering academia, he worked in local government planning. He joined ANU as a general staff member in 1988, later undertaking PhD studies before becoming a member of academic staff.

Professional Activities

Research and teaching in theoretical and policy dimensions of sustainability, institutional arrangements for resource management, science-policy linkages, and Australian environmental history.

Editorial boards of Global Environmental Change; Environmental Science and Policy; Australasian Journal of Environmental Management.

Adjunct Principal Research Fellow, Charles Darwin University.

Academic Highlights

Steve has published over 200 articles, books, chapter and reports, has supervised more than 40 PhD students, and acted as consultant and adviser to a range of private and public sector bodies.

Selected Publications

Ross, A. and Dovers, S. 2008. Making the harder yards: environmental policy integration in Australia. Australian Journal of Public Administration. 67: 245-260.

Dovers, S. 2008. Urban water: policy, institutions and governance. In: Troy, P. (ed). Troubled waters: confronting the water crisis in Australia's cities. Canberra: ANU E-Press.

Handmer, J. and Dovers, S. 2007. Handbook of disaster and emergency policies and institutions. London: Earthscan.

Hussey, K. and Dovers, S. (eds) 2007. Managing water for Australia: the social and institutional challenges. Melbourne: CSIRO Publishing.

Dovers, S. 2005. Environment and sustainability policy: creation, implementation, evaluation. Sydney: Federation Press. Dovers, S. 2005. Environment and sustainability policy: creation, implementation, evaluation. Sydney: Federation Press.

"...compulsory reading for all local and central government politicians" - Morgan William, New Zealand Parliamentary Commissioner for the Environment.

"...a seminal contribution to the literature on learning for sustainability, a truly comprehensive analysis of the issues and policy implications" - Paul Perkins, Chair, National Environmental Education Council, Australia.

Connor, R. and Dovers, S. 2004. Institutional change for sustainable development. Cheltenham: Edward Elgar.

`Does the road to sustainable development run through institutional reform or, better yet, institutional learning? In this well-argued book, Robin Connor and Stephen Dovers draw on a range of case studies to demonstrate the critical role that institutions play in determining the course of human-environment relations.

- Oran R. Young, University of California, Santa Barbara, US

`Connor and Dovers correctly argue that achieving sustainability is a long-term process. In this context, they analyze broad institutional innovations toward sustainability to date - from Europe to New Zealand, from sustainability councils to property rights - to suggest how the historical process might be improved and accelerated. This is among the most constructive efforts I have read.

- Richard B. Norgaard, University of California, Berkeley, US.

Dr Don Driscoll

Fellow

Applied ecological theory, fire ecology, biodiversity in fragmented landscapes

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Career Brief

PhD, UNI WA, metapopulation ecology of endangered frogs.

CSIRO Post-Doc, Canberra. Impacts of habitat loss and fragmentation on reptiles and beetles in agricultural landscapes.

ARC Post-Doctoral Fellowship, UTAS. Habitat fragmentation and metapopulations.

Lecturer, Flinders University. Coordinating/teaching a post-graduate biodiversity course. Fire and fragmentation research.

Fellow, Fenner School of Environment and Society, ANU.

Professional Activities

All of my research has Conservation biology as a central theme, with a focus on how species use whole landscapes. I take a range of approaches, including manipulative experiments, natural experiments, dispersal studies and the application of population genetic techniques. I place a strong emphasis on testing ecological theory using applied conservation problems.

Ecological Synthesis

Using David Lindenmayer's large data sets, I am challenging a range of ecological theory, including metacommunity theory and assembly rules. My objective is to understand where particular theory has predictive value and how that knowledge might be applied in conservation biology.

Habitat Fragmentation and Loss

I am co-supervising two students who are examining the mechanics of connectivity for wildlife in agricultural landscapes. These will examine how reptiles and beetles use linear remnants and planted strips in mallee habitats. Collaborators include University of Melbourne, Flinders University and DEH SA. A new project currently available will examine dispersal out of remnant vegetation.

Fire Ecology

An ARC Linkage Grant will enable us to understand the mechanisms underlying fire responses using a combination of field and genetic techniques. Collaborators include ANU, Flinders Uni, Wollongong Uni, DEC NSW, DEH SA and the Native Vegetation Council, SA. PhD positions are currently available in association with this project.

Selected Publications

Driscoll, D. A. 2008. The frequency of metapopulations, metacommunities and nestedness in a fragmented landscape. Oikos 117: 297-309

Driscoll, D.A., Henderson, M.K., 2008. How many common reptile species are fire specialists? A replicated natural experiment highlights the predictive weakness of a fire succession model. Biological Conservation 141: 460-471.

Driscoll, D. A. 2007 How to find a metapopulation. Canadian Journal of Zoology 85: 1031-1048.

Driscoll D.A. & Hardy C.M. 2005. Dispersal and phylogeography of the agamid lizard Amphibolurus nobbi in fragmented and continuous habitat. Molecular Ecology14,1613-29.

Driscoll D.A. & Weir T. 2005. Beetle responses to habitat fragmentation depend on ecological traits, remnant condition and shape. Conservation Biololgy19,182-94.

Driscoll D.A. 2004. Extinction and outbreaks accompany fragmentation of a reptile community. Ecological Applications14,220-40.

Mr David Dumaresq

Convenor, Human Ecology Program

Senior Lecturer

Human ecology, agroecology, sustainable systems, transdisciplinary studies

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Career Brief

David studied physics and maths at the University of Melbourne before moving to philosophy and social theory at the University of Queensland graduating in 1973. He then spent six years in the Philosophy Department in the Research School of Social Sciences at ANU working on environmental philosophy, ethics, philosophy of science and social theory. During this time he also took up organic agriculture and the practical application of sustainable production systems. During the 1980s he had a range of part-time teaching positions in the Human Sciences program at ANU while also developing and operating commercial organic farms. In 1986 he completed the first international short course on Agroecology, at the University of California, Berkeley and Santa Cruz campuses. From 1987-90 he was a member of the National Executive of the National Association for Sustainable Agriculture, Australia. In 1987 he took up a part-time lectureship in the Human Sciences Program to teach agroecology and sustainable systems. In 1991 he took up a full-time academic position in the Human Ecology Program. He has been Program convenor since 1992. He is actively involved with a range of research and extension projects with farmers and with the wider organic agriculture industry.

Professional Activities

My research and teaching is based around three main areas.

Investigating sustainable systems, including whole farm systems and measuring environmental, economic and social impacts, in particular the sustainability of alternative management practices, especially organic farming. Within farming systems I am researching particular agroecological interactions between farming operations, plant growth and soil ecological function. I am completing a 10 year project comparing the sustainability of organic and conventional wheat farming in Australia. Across wider agricultural systems operations I am investigating farmer's ecological behaviour and its relationship to the development of regulatory frameworks for national and international sustainable agriculture.

Within urban systems I am involved in the application of sustainability criteria for planning and construction of human scale communities.

I am developing the role of transdisciplinary studies in environmental research and teaching. This involves collaboration with graduate students in the investigation of the foundations and methods of interdisciplinary science, the development of transdisciplinary methodologies and their application to postnormal science and the development of policy. These studies include the development of human ecology as an approach to understanding social and ecological linkages.

Thirdly I have maintained a strong interest in environmental philosophy, in particular in the ethics of eating including the relationship between ecologically and ethically sound consumption. Other ethical issues of concern include the development of transgenics and the ownership of life.

Selected Publications

Dumaresq, D & Greene, R. 2001 Soil Structure, Fauna and Phosphorus in Sustainable Cropping Systems. RIRDC 01/130. 44p

Derrick, J.W. & Dumaresq, D. 1999 'Soil chemical properties under organic and conventional management in southern new South Wales' Aust. J. Soil Res., 37, 1047-55.

Dumaresq, D., Greene, R. & van Kerkhoff, L. (eds) 1997 Organic Agriculture in Australia. RIRDC 97/14. 220p.

Dumaresq, D. 1997 'Industry Profile' in Dumaresq, D., Greene, R. & van Kerkhoff, L. (eds) 1997 Organic Agriculture in Australia. RIRDC 97/14: 1-4.

Dumaresq, D. & Greene, R. 1997 'Review of the Organic Industry', in Dumaresq, D., Greene, R. & van Kerkhoff, L. (eds) 1997 Organic Agriculture in Australia. RIRDC 97/14: 95-109.

Dr Robert Dyball

Convenor Human Ecology Program

Lecturer

Human Ecology especially Urban Ecology, Education for Sustainability (EfS), Dynamic Systems Thinking

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Career Brief

Robert grew up in London, England escaping to Australia in 1981. In Sydney he worked for the NSW Tourism Commission and completed first year Philosophy and Anthropology at the University of Sydney. In 1994 he transferred to Canberra and ANU, majoring in Philosophy and Human Ecology and graduating with Honours in Human Ecology in 1998. Robert obtained his PhD at the Centre for Resource and Environmental Studies (CRES), whilst lecturing in the Human Ecology program in SRES. His PhD was titled A Critical Analysis of Human Ecology, which involved the application of dynamic systems thinking to the conceptual structure of Human Ecology to create a powerful means of understanding the characteristic changes in human-ecological situations. Robert continues to lecture in the Human Ecology Program. He lectures in Human Ecology, Cites and their Hinterlands, and Human Futures.

Professional Activities

Current research is on furthering the application of dynamic systems thinking in Human Ecology and in understanding socio-biophysical interactions more generally. Current projects include the ACT Food Flows project, in collaboration with CSIRO and Stockholm University; the Integrated Assessment of Climate Change Impacts on Urban Settlements (IACCIUS), which is an AGO funded project involving a range of Fenner academics; the Interdisciplinary Research Approaches for Understanding and Intervening in the Obesity Epidemic project involving Fenner, CSIRO, ADFA, NCEPH and ACT Health. A range of activities around EfS are being conducted, many in collaboration with ANUgreen. Robert is on the board of the international Society for Human Ecology

Selected Publications

Dyball, R., Brown, V. A. & Keen, M. 2007. Towards Sustainability: Five strands of social learning. In Wals, A. (Ed.) Social Learning: Towards a more sustainable world. The Netherlands, Wageningen Academic Publishers.

Dyball, R. & Carpenter, D. 2006. Human Ecology and Education for Sustainability. In CARPENTER, D. & LEAL-FILHO, W. (Eds.) Sustainability in the Australasian University Context. Frankfurt, Peter Lang.

Dyball, R., Beavis, S. & Kaufmann, S. 2005. Complex Adaptive Systems: Constructing Mental Models. In Keen, M., Brown, V. A. & Dyball, R. (Eds.) Social Learning in Environmental Management: Building a sustainable future. London, Earthscan.

Carpenter, D. & Dyball, R. 2006. "Outside In" - Experiential Education for Sustainability. In FILHO, W. L. (Ed.) Innovation, Education and Communication for Sustainable Development. Frankfurt, Peter Lang.

Keen, M., Brown, V. A. & Dyball, R. (Eds.) Social Learning in Environmental Management: Towards a Sustainable Future. London, Earthscan.

Brown, V. A., Keen, M. & Dyball, R. 2005. Lessons from the Past, Learning for the Future. In KEEN, M., BROWN, V. A. & DYBALL, R. (Eds.) Social Learning in Environmental Management: building a sustainable future. London, Earthscan.

Brown, V. A., R, D., Keen, M., Lambert, J. & Mazur, N. 2005. The Reflective Practioner: Practising what we preach. In KEEN, M., BROWN, V. A. & DYBALL, R. (Eds.) Social Learning in Environmental Management: Towards a Sustainable Future. London, Earthscan.

Keen, M., Brown, V. A. & Dyball, R. 2005. Social Learning: A New Approach to Environmental Management. In KEEN, M., BROWN, V. A. & DYBALL, R. (Eds.) Social Learning in Environmental Management: Towards a Sustainable Future. London, Earthscan.

Dyball, Robert 2005. Understanding Obesogenic Environments from the Perspective of Human Ecology, in Proceedings of the 2nd State of Australian Cities Conference, Griffith University, Brisbane.

Dr John Field

Fenner Undergraduate Student Advisor, Resource and Environmental Management Program Convenor, Honours Convenor

Senior Lecturer

Landscape sciences, farm forestry, soil formation and management, biota and regolith / soils, regolith and landscape evolution, sustainable land management

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Career Brief

I grew up in Sydney and was educated at Sydney Boys High, and then UNSW where I studied pedology, geomorphology and geology, completing a 4 year concurrent Honours in Science in 1973. I moved to UNE at Armidale and wrote a PhD on the hydro-bio-geochemistry of small rural catchments. After 6 years' teaching in the Faculty of Natural Resources at UNE, I joined CRA (now RTZ) Exploration in Canberra as an in-house geomorphologist / consultant in their Research Group. In 1986, I joined the then ANU Department of Forestry to teach soils to forestry and resource management students. I carry out research into most aspects of the interaction of biota with soil formation, regolith and landscapes, and sustainable land management, including dry sclerophyll forest management. I own and manage a grazing/native forest property on which I am practising what I preach by managing and planting trees to demonstrate the integration and viability of agroforestry, farm forestry and native forestry, while maintaining sustainable cattle, sheep and goat enterprises. I continue to act as a consultant and advisor to the landcare, agricultural, forestry, mining and land development industries. I am also very interested in student services at ANU and advise students on degrees, courses and careers as student advisor to the School.

Professional Activities

Soils and landscapes, and aspects of their formation, evolution and management is a fair summary of my research interests. In this context, I was a founding member of CARS (Centre for Australian Regolith Studies) and then CRC LEME Mk I and Mk II (Landscape Environment and Mineral Exploration) and continue to work in the effects of the biota on soils, regolith and landscape evolution research and applications.

My fundamental interest in agriculture and forestry is the critical relationship that exists between plants (trees) and soil - the ways in which soil controls the growth of plants, but also the effects that trees have on the formation and evolution of soils and regolith. Other biotic factors are also important to the formation and evolution of soils, regolith and landscapes and these are also the subjects of my research and that of the postgraduates I supervise.

I have a continuing interest in multipurpose and sustainable utilisation of trees in agricultural and forest land management, planning and development. To this end I lead a major RIRDC funded project on "The Management of Privately Owned Dry Sclerophyll Forests". I am also interested in the "intangible values" of privately owned forestry and farm forestry including environmental services, capital value of land and aesthetic values.

Courses I coordinate, or in which I teach, include: Australia's Environment, Australian Landscapes and Soils, Soil Resources and Management, Geomorphology, Land and Catchment Management and Farm & Urban Forestry. Each of these courses is also offered at the graduate level and some are offered in professional, short course and in web based format.

Selected Publications

Field, J.B., Turner, B.J. & McElhinny, C. 2008. A Native Dry Sclerophyll Forest Management Toolbox. In Race, D & Stewart, H. (eds). Proceedings of the Australian Forest Grower National Conference, Albury. October.

Field, J.B. & Little, D. 2008. Biota and the Regolith. Ch 8 in Scott, K and Pain, C. (eds) Regolith Science, CSIRO Pub, Melb.

Field, J.B. 2004. Geomorphology and the Biota. ANZGG Conference, Mt Buffalo, Victoria, February.

Field, J.B. and G. R. Anderson, 2003. Biological Agents in Regolith Processes: Case study on the Southern Tablelands, NSW.CRC LEME Conference, Canberra, November

Newham, L., Buller, C., Barnett, P. and Field, J.B. 2001. Land-use change assessment tools. Report to Environment ACT, Canberra

Dr Joern Fischer

Research Fellow

Conservation in human-modified landscapes

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Career Brief

I completed my PhD in 2004. It focused on reptiles in two different human-modified landscapes – the Nanangroe grazing landscape, and the Tumut plantation landscape.

I then worked on a postdoc project for two years. During this time, I reviewed and synthesized existing datasets collected by Professor David Lindenmayer and his team, and I co-wrote a book on habitat fragmentation together with David.

In 2007, I started a new project funded by the Australian Research Council to investigate regional-scale patterns of tree regeneration (and regeneration failure).

Professional Activities

My current research is investigating trends in tree regeneration under different livestock grazing regimes near Canberra. We are also conducting fauna surveys to determine habitat associations for selected fauna. Specifically, we will:

- determine the extent of tree regeneration and regeneration failure across the region;

- identify management practices associated with sustainable levels of tree regeneration;

- establish links between fauna and tree cover;

- project tree cover into the future on the basis of past regeneration rates, and under different management scenarios; and

- project the distribution of selected fauna species into the future, given their habitat associations with tree cover.

Academic Highlights

A recent highlight has been that the Australian Research Council listed my recent ARC project as one of the three most innovative ones from the Australian Capital Territory, out of over 300 applications from all academic disciplines.

In June 2008, I visited the Stockholm Resilience Centre to work on a collaborative paper with Swedish colleagues. The visit was funded by the Ian Potter Foundation.

Selected Publications

Fischer, J. and Lindenmayer, D. B. 2007. Landscape modification and habitat fragmentation: A synthesis. Global Ecology & Biogeography 16, 265-280.

Lindenmayer, D. B. and Fischer, J. 2007. Tackling the habitat fragmentation panchreston. Trends in Ecology & Evolution 22, 127-132.

Fazey, I., Fazey, J., Fischer, J., Sherren, K., Warren, J., Noss, R., Dovers, S. 2007. Adaptive capacity and learning to learn as leverage for social-ecological resilience. Frontiers in Ecology and the Environment, in press.

Manning, A. D., Fischer, J. and Lindenmayer, D. B. 2006. Scattered trees are keystone structures – implications for conservation. Biological Conservation 132, 311-321.

Lindenmayer, D. B. and Fischer, J. 2006. Habitat fragmentation and landscape change: an ecological and conservation synthesis. Island Press, Washington D.C.

Dr Philip Gibbons

Senior Fellow

Decision support systems for natural resource management; rapid biodiversity assessment; environmental monitoring

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Career Brief

Dr Philip Gibbons graduated from Deakin University (Environmental Assessment and Land Use Policy) in 1988 and gained practical experience with the Victorian and New South Wales governments before completing his PhD at The Australian National University in 1999. He has held research positions at CSIRO Division of Forestry and Forest Products and the NSW Government. Phil has been a Visiting Scientist at CSIRO Division of Sustainable Ecosystems since 2001 and Senior Research Fellow (part-time) and The Australian National University since 2006.

Professional Activities

Phil provides advice and publishes widely on: the conservation of fauna in timber production forests, the future of remnant vegetation in agricultural landscapes, land clearing and incentive programs. Current and recent projects include: a conservation index for box-gum woodland, quantifying reference conditions, the future of scattered trees in agricultural landscapes, the effects of disturbance intensity and scale on native biota, the use of wireless sensors for monitoring native vegetation and policy instruments for natural resource management in China.

Academic Highlights

Phil was awarded Australian Research Council fellowships in 1993, 1996 and 2001 to undertake a Masters degree, PhD and a postdoctoral fellowship. He has published over 30 peer reviewed articles and one book that has sold over 1000 copies. A decision support system he developed for native vegetation management received a commendation in the NSW Government's Premier Awards. He has supervised several honours, masters and PhD students.

Selected Publications

Gibbons, P., Zammit, C., Youngentob, K., Possingham, H.P., Lindenmayer, D.B., Bekessy, S., Burgman, M., Colyvan, M., Considine, M., Felton. A., Hobbs, R.J., Hurley, K., McAlpine, C., McCarthy, M.A., Moore, J., Robinson, D, Salt, D. and Wintle, B. (in press). Some practical suggestions for improving engagement between researchers and policy-makers in natural resource management. Ecological Management and Restoration.

Gibbons, P., Briggs, S.V., Ayers, D.A., Seddon, J.A., Doyle, S.J., Cosier, P., McElhinny, C., Pelly, V., Roberts, K., (2009). An operational method to assess impacts of land clearing on terrestrial biodiversity. Ecological Indicators, 9: 26-40.

Gibbons, P., Lindenmayer, D., Fischer, J., Manning, A., Weinberg, A., Seddon, J., Ryan, P., Barrett, G., (2008). The future of scattered trees in agricultural landscapes. Conservation Biology, 22: 1309-1319.

Gibbons, P., Briggs, S.V., Ayers, D.A., Doyle, S., Seddon, J., McElhinny, C., Jones, N., Sims, R., Doody, S.J., (2008). Quantifying reference conditions in modified landscapes. Biological Conservation, 141: 2483-2493.

Gibbons, P., Cunningham, R.B., Lindenmayer, D. (2008). What factors influence the collapse of trees retained on logged sites? A case-control study. Forest Ecology and Management 255, 62-67.

Dr Richard Greene

Academic Advisor

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Soil and land management

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Career Brief

Richard grew up in Perth, Western Australia, with an architect father, and was a keen member of the army reserve and swimmer at Perth's beaches during his university studies. After completing a BSc (with honours in Physical and Inorganic Chemistry) in 1970 from the University of Western Australia, Richard undertook a PhD in Soil Science from 1971-1975, also at the University of Western Australia. He then joined the Victorian Department of Agriculture, and from 1975 to 1985 worked as a soils research officer at the Irrigation Research Institute, Tatura. Then from 1985 to 1993, he worked as a Senior Research Scientist in the CSIRO Division of Wildlife and Ecology, firstly at Deniliquin, NSW, and later in Canberra, ACT. In 1993 he joined The Australian National University as a Lecturer in Soil and Land Management in the then School of Resources, Environment and Society.

Professional Activities

Research and consulting experience includes:

1. Rehabilitation of degraded lands: have investigated the formation and rehabilitation of degraded rangelands, alpine and sub-alpine regions, minesites and semi-arid cropping-grazing lands.

2. Development of sustainable cropping/grazing enterprises including: time-controlled grazing, pasture cropping, natural sequence farming and conventional and organic systems of agriculture.

3. Research on properties of aeolian dust and its implications for : (i) soil formation and soil-landscape proceses such as erosion and salinity, (ii) mineral exploration, (iii) minesite rehabilitation

4. Carbon sequestration: with staff from Lachlan CMA, NSW DECC and L.Cowal Foundation researching the effects of land management practices on carbon sequestration and soil properties.

* Consultancies with TRANSGRID on evaluation of erosion hazard following clearing and rehabilitation and EMBRAPA (Brazilian federal research organisation) on management of hardsetting soils.

* Author of approximately 60 refereed publications in clay colloid chemistry, amelioration of soil structure, rehabilitation of degraded lands, and the development of sustainable cropping systems.

* Funding from competitive research grants from the NSCP, RIRDC, HRDC, ARC.

My current research supervision includes five PhDs, three masters and two honours students. I also lecture in three undergraduate courses in soil and land management.

Academic Highlights

* Invited keynote speaker at three international conferences on (i) erosion processes in patterned landscapes (ii) processes of soil-water interaction and (iii) management of hardsetting soils.

Selected Publications

Greene, R.S.B., Valentin, C. and Esteves, M. 2001. Runoff and erosion processes. In Banded Vegetation Patterning in Arid and Semi-arid Environment-Ecological Processes and Consequences for Management. (Eds. C. Valentin, D. Tongway, J. Seghieri and J.M. d'Herbes), Springer-Verlag. Ecological Studies 149. (pp. 52-76).

Greene, R.S.B., and Hairsine, P. 2004.. Elementary processes of soil-water interaction and thresholds in soil surface dynamics: a review. Earth Surface Processes and Landforms Special Issue. 'Soil Surface Characteristics: dynamics and impact on soil erosion' (Eds Auzet A.-V., Poesen J., Valentin C), 29, 1077-1091.

Tate, S.E., Greene, R.S.B., Scott, K.M., and McQueen, K.G. (2006). Recognition and characterisation of the Aeolian component in soils in the Girilambone Region, north western New South Wales, Australia. Catena, 69, 122-133.

Turner, M. L., Greene, R.S.B., Knackstedt, M., Senden, T.J., Sakellariou, A, and White, I. (2008). Use of gamma emission CT to study the effect of electrolyte concentration on regions of preferred flow and hydraulic conductivity in deep regolith materials. Australian Journal of Soil Research, 46, 101-111.

Greene, R.S.B., Cattle, S.R., and McPherson, A.A.(2008). The Role of Aeolian Dust Deposits in Landscape Development and Landscape Degradation in Southeastern Australia. In Special Publication on Australian Cainozoic Cratonic Basins; International Association of Sedimentologists (in press).

Professor Neil Gunningham

Professor

Environment regulation, governance and policy

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Career Brief

Neil Gunningham obtained the degrees of LLB (Hons) and MA (Criminology) from the University of Sheffield, UK, and is a Barrister and Solicitor (ACT). He also holds a PhD from ANU. Although initially trained in law, his subsequent post-graduate work was in interdisciplinary social science, and for the last ten years he has applied that training principally in the area of environment, with a focus on regulation. He joined the Fenner School in January 2002. Previously he was Foundation Director of the ANU Australian Centre for Environmental Law.

Professional Activities

My research and teaching interests focus on environmental regulation, governance and policy. One strand of my research has been concerned to identify the contribution that broader, innovative forms of regulation can make to environmental law. This includes the potential roles of community participation, information based strategies, environmental partnerships and various forms of co-regulation. I have also sought to explain the interrelation between such mechanisms; and to identify the comparative advantage of different instruments in different institutional, economic and social contexts and to argue the case for developing an optimal regulatory mix.

Most recently, I and my colleagues are researching a far reaching alternative to traditional natural resource management strategies: The New Collaborative Environmental Governance. We are seek to examine, assess and critique the new governance, develop principles enabling its mobilization in an effective and democratically acceptable manner, and investigate the challenges it poses for our understanding of law, regulation and public policy, and its implications for theories of governance more generally. Our longer term agenda is to identify and promote possible models for effective collaborative governance to be used to tackle climate change.

Academic Highlights

Fulbright Senior Scholar, University of California, Berkeley. Fellow of the Australian Academy of Social Sciences.

Selected Publications

Books:

Gunningham, N Kagan R and Thornton, D 2003. Shades of Green: Business, Regulation and Environment, Stanford University Press, USA.

Gunningham, N and Sinclair D 2002. Leaders and Laggards: Next Generation Environmental Regulation, Greenleaf, UK.

Gunningham, N. & Grabosky, P. 1998. Smart Regulation: Designing Environmental Regulation, Oxford University Press, UK.

Articles:

"Motivating Management: Corporate Compliance in Environmental Protection" (with D Thornton and R Kagan) Law and Policy, Vol 27 No 2, April 2005; 89-316;

"Corporate Environmental Responsibility: Law and the Limits of Voluntarism: in McBarnett, D, Voicelescu, A & Campbell T The New Corporate Accountability, Cambridge UP 2007.

Dr Rob Heinsohn

Senior Fellow

Conservation biology, evolutionary ecology

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Career Brief

My research interests lie in the conservation biology and evolutionary ecology of vertebrates. I have completed three long term field projects including the behavioural ecology of intensely social white-winged choughs (1985-present), cooperation and cheating in lions (1990-1995), and the evolutionary ecology of reverse dichromatism in Eclectus parrots (1997-present). My long term studies on large endangered parrots on Cape York Peninsula investigate their social organisation, availability of nest hollows, and the evolution of their unusual plumage colours. Increasingly, I am directing my research at the landscape level as I seek to identify the broad-scale processes shaping social evolution and the interactions between humans and wildlife. My current ARC funded research investigates the migratory movements of birds between Australia and its northern neighbours. Understanding our "northern connections" has important conservation implications and provides knowledge of the likelihood of transmission of pathogens such as avian influenza.

See more research details at: http://people.anu.edu.au/robert.heinsohn

Professional Activities

Conservation biology and landscape ecology of endangered vertebrates, including large parrots, social passerines, migratory birds, and reptiles

Academic Highlights

I completed my long term ARC-funded project on Cape York parrots in 2007 and commenced a new ARC Linkage project investigating the biological connections with our northern neighbours (PNG, Indonesia) brought about by migrating birds. The project entails fieldwork in PNG, Timor, and northern Australia to track migrating ducks using satellite telemetry and determine the connectedness of populations using genetic techniques. In 2007/2008 I have worked in collaboration with Libby Robin and Leo Joseph to run a workshop and edit an inter-disciplinary book titled "Boom and Bust: Bird Stories for a Dry Country". During this period I also authored another book on the wildlife of Cape York Peninsula. Six of my PhD students have completed their theses since 2006, and I am spending much of 2008 on sabbatical at UBC, Vancouver, collaborating on new projects concerning evolutionary biology and human-wildlife interactions.

Selected Publications

Heinsohn R (2008) The ecological basis for unusual sex roles in Eclectus parrots. Animal Behaviour 76: 97-103

Saunders DL, Heinsohn R (2008) Winter habitat use by the endangered migratory Swift Parrot (Lathamus discolor) in New South Wales. Emu 108: 81-89

Blackmore CJ, Heinsohn R (2008) Variable mating strategies and incest avoidance in cooperatively breeding grey-crowned babblers. Animal Behaviour 75: 63-70

Gardner J, Heinsohn R (2007) Probable consequences of high female mortality for speckled warblers living in habitat remnants. Biological Conservation 135: 489-499

Wilson D, Endler JA, Heinsohn R (2007) The adaptive significance of ontogenetic colour change in a tropical python. Biology Letters 3: 40-43

Blackmore CJ, Heinsohn R (2007) Reproductive success and helper effects in the cooperatively breeding grey-crowned babbler. Journal of Zoology (London) 273: 326-332

Dr Natasha Herron

Research Fellow

Hydrology, salinity, erosion, water resources management, integrated catchment management

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Career Brief

Natasha Herron completed her undergraduate education at Macquarie University, Sydney, where she majored in resource and environmental management, with a focus on soil erosion and geomorphology. Her PhD, undertaken through a joint arrangement with the University of Melbourne and CSIRO Land and Water via the Cooperative Research Centre for Catchment Hydrology, investigated the role of riparian areas on catchment hydrologic connectivity.

Upon completing her PhD, Natasha worked in both Federal and State government agencies, in such areas as water resource security, the NLWRA catchment condition assessment, recharge and runoff modelling, salinity modelling and the development of decision support tools for catchment management and property-level planning.

Natasha moved to iCAM in the Fenner School in 2007.

Professional Activities

Natasha recently finished work on the development of a decision support system for NSW Catchment Management Authorities to assist them with catchment planning, target setting and on-ground investment decision processes. She is currently working on improving the representation of groundwater processes within the IHACRES rainfall-runoff model, as part of a larger Cotton CRC funded project on modelling groundwater-surface water interactions. With other Fenner School researchers, she is exploring the impacts of land cover change and climate on catchment water yields at a range of temporal and spatial scales, in a number of upland Murray River Basin catchments.

In 2008, Natasha taught the Water Resources Management course (ENVS3005/6555), and will co-teach this course in 2009. She also contributes to the teaching of Environmental Modelling (MATH3133), and is supervising a number of student projects.

Selected Publications

Herron N.F. and Croke, B.F.W. (in press) Including the Influence of Groundwater Exchanges in a Lumped Rainfall-Runoff Model, J. Math. Comp. Sim. 0.1016/j.matcom.2008.08.007

Herron N.F., Davis, R.J., Dawes, W. and Evans, W.R. 2003. Modelling the impacts of strategic tree plantings on salt loads and flows in the Macquarie River Catchment, NSW, Australia. Journal of Environmental Management, 68, 37-50

Herron N.F., Davis, R.J. and Jones, R.N. 2002. The Effects of Large-Scale Afforestation and Climate Change on Water Allocation in the Macquarie River Catchment, NSW, Australia. Journal of Environmental Management, 65, 369-381

Herron N.F. and Wilson, C.J. 2001. A water balance approach to assessing the hydrologic buffering potential of an alluvial fan, Water Resources Research, 37(2), 341-351

Herron, N.F. and Hairsine P.B. 1998. Are riparian zones effective in reducing overland flow to streams? Predictions for a range of Australian environments. Aust Jnl Soil Res. 36(4) 683-98.

Butterworth, R., Wilson, C.J., Herron, N.F., Greene, R.S.B. and Cunningham, R.B. 2000. Geomorphic controls on the physical and hydrologic properties of soils in a confined stream valley in New South Wales, Australia. Earth Surface Processes and Landforms, 25, 1161-1179

Dr Kersty Hobson

Lecturer

Human Geography, Environmental Politics and Sustainability

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Career Brief

Kersty studied Anthropolgy for both her BA Hons (Durham University, UK) and MPhil (University of Cambridge). After a few years of public sector work and travel, she undertook a PhD in Geography at University College London, where her research focussed on household sustainable consumption and environmental politics. Whilst studying for her PhD, she was also an active member of her department's environmental consultancy unit, which undertook projects into public participation in environmental decision making and urban sustainable development policy - interests she still pursues in her work today. Since completing her PhD in 2001 she has held academic positions at both the University of Birmingham (UK) and The Australian National University.

Professional Activities

Editorial board for the journals Geoforum and Sustainability: Science, Policy and Practice (see http://ejournal.nbii.org): a member of the ANU Delegated Research Ethics Committee.

Academic Highlights

2008-2010: ARC Discovery Award DP0879092 Social Adaptation to Climate Change in the Australian Public Sphere: A comparison of individual and group deliberative responses to scenarios of future climate change.

2003-4: UK Economic and Social Research Council Environment and Human Behaviour New Opportunities Programme: 'Predicting Thresholds of Social Behavioural Responses to Rapid Climate Change'.

Selected Publications

Hobson, K. (2008) Reasons to be cheerful: thinking (sustainably) in a climate changing world. Geography Compass 2 (1): 199-214

Hobson, K. (2007) Political animals? On animals as subjects in an enlarged political geography. Political Geography 26 (3): 250-267

Hobson, K. (2006) Bins, bulbs and shower timers: on the 'techno-ethics' of sustainable living, Ethics, Place and Environment 9(3): 335-354

Niemeyer, S., Petts, J., and Hobson, K. (2005) Rapid climate change and society; assessing responses and thresholds, Risk Analysis 25(6): 1443-1456

Hobson, K. (2002) Competing Discourses of Sustainable Consumption: does the 'rationalisation of lifestyles' make sense?, Environmental Politics 11 (2): 95-120. Reprinted in Jackson, T. (ed.) 2006, The Earthscan Reader in Sustainable Consumption. Earthscan, London

Dr Hartmut Holzknecht

Research Fellow

Social anthropology, Melanesia, land and other natural resource use, management and tenure systems, community and rural development, institutions and institutional change, policy development, socio-economic persistence and change, climate change and associated issues.

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Career Brief

Hartmut Holzknecht is a social anthropologist with major interests in natural and human resource management issues, in resource use and tenure systems and property relations, in socio-cultural, socio-economic and socio-political persistence and change, in community and rural development issues and in the nexus between human societies and natural resource management. The new arena of climate change and its implications for customary resource owners (in particular in Melanesia) has more recently become a new area of focus, particularly the implications for both human societies and the environments within which they live, and the resilience of both sectors in adapting to changes. The main area of research-and-development activity is the Melanesian region of the southwest Pacific.

Professional Activities

Working with Professor Peter Kanowski as team leader and on a half-time basis, Dr. Holzknecht coordinates and manages a four-year project, funded by the Australian Centre for International Agricultural Research, entitled 'Value-adding to Papua New Guinea Agroforestry Systems [Integrating Commercial Tree Species into Papua New Guinea Farming Systems]'. This involves regular periods of fieldwork in Papua New Guinea [PNG]; project work is being carried out in conjunction with a number of PNG partner organizations and individuals as well as with a small group of Australian-based collaborating scientists. This is in addition to Dr Holzknecht's own R&D contributions to the project.

Dr Holzknecht also supervises graduate students in the Fenner School, at Independent Research Project, Masters Research Essay and at PhD levels.

In a private capacity Dr Holzknecht is also regularly involved as a consultant in a range of projects and 'research and development' activities in the Southwest Pacific region, but especially in Papua New Guinea.

Selected Publications

Bulai, S., Groves, K., Holzknecht, H., James, R. and Race, D in press A Review of the Use of Portable Sawmills in Papua New Guinea and the Solomon Islands: 'Identifying the factors for success'. Final Report of ACIAR Project FST/2003/049.

Holzknecht, H. 2005 Models for successful rural development. Development Bulletin. No. 67: 30-32 [Effective Development in Papua New Guinea: Local Initiatives and Community Innovation]

Holzknecht, H. Presentation 'Oceania: islands of contrasts'. IUFRO-WFSE Policy Workshop, January 12-16, Victoria, B.C., Canada [preparing policy brief to accompany WFSE volume for the IUFRO World Congress, Brisbane, August 2005].

Kanowski, P., H. Holzknecht and C. Perley (leading convenors) 2005 'Oceania: islands of contrasts', Chapter 18 in G. Mery et al. (eds.), World Forests, Society and Environment Project. Helsinki: International Union of Forest Research Organizations.

Kanowski, Peter, Hartmut Holzknecht and Andrew McGregor in press Value-Adding to Papua New Guinea Agroforestry Systems through the Incorporation of High-Value Trees Species. ACIAR Project FST/2005/050 Scoping Study Report.

Mandan, T. and H. Holzknecht 2005 'Nanak mutuk': Development through self-reliance in the Burum Valley. Development Bulletin. No. 67: 33-36 [Effective Development in Papua New Guinea: Local Initiatives and Community Innovation].

Professor Michael Hutchinson

Interim Director and IT Convenor

Professor

Spatial and temporal analysis of environmental data and digital terrain analysis

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Career Brief

Michael Hutchinson graduated with a PhD in Mathematics from the University of Sydney in 1977. He developed his interests in spatial and temporal analysis of environmental data, particularly spatial modelling of climate and topography, during his time at CSIRO Division of Land Use Research and Division of Mathematics and Statistics from 1978 to 1987. He came to the Centre for Resource and Environmental Studies at ANU in 1987. He was appointed Deputy Director of CRES in 2003, served as Acting Director during 2004-2005 and was appointed Interim Director in 2006 and again in 2008 as the Interim Director of the Fenner School.

Professional Activities

He continues to develop and apply computer-based techniques for spatial and temporal analysis of environmental data and is actively involved in a wide range of applications. This includes the development of digital elevation models with applications to catchment hydrology; the development of terrain dependent spatial climate interpolation methods with applications to assessment of biodiversity and water resources; the development of space-time, stochastic daily weather models for calibration of climate change. He is responsible, with John and Janet Stein, for the development and upgrade of the 9 second digital elevation model of Australia

Academic Highlights

His techniques for the analysis and modelling of climate and terrain, as implemented in the packages ANUDEM, ANUSPLIN and ANUCLIM, are recognised and employed worldwide. His Australia-wide terrain and climate models have underpinned much of the natural resource and environmental analysis carried out by Australian Universities and Government Institutions over the last 20 years. He was awarded the Alexander Medal by the Australian Institute of Engineers in 1993, the Biennial Medal for General Systems Modelling by the Modelling and Simulation Society of Australia 1995 and a Merit Award for creativity, exceptional achievement and collaboration by the Department of Natural Resources of Canada in 2001.

Selected Publications

Hutchinson, M.F. 2008. Adding the Z-dimension. In: J.P. Wilson and A.S. Fotheringham (eds), Handbook of Geographic Information Science, Blackwell, pp 144-168.

Dovers, S.J., Hutchinson, M.F., Lindenmayer, D.L., Manning, A., Mills, F., Perkins, P., Sharples, J. and White, I. 2008. Uncertainty, complexity and the environment. In: Bammer, G. and Smithson, M. (eds), Uncertainty and Risk: Multi-Disciplinary Perspectives. Earthscan, London, pp 245-260.

McKenney, D.W., Pedlar, J.H., Papadopol, P. and Hutchinson, M.F. 2006. The development of 1901-2000 historical monthly climate models for Canada and the United States. Agricultural and Forest Meteorology 138: 69-81.

Hutchinson, M.F., McIntyre, S., Hobbs, R.J., Stein, J.L., Garnett, S. and Kinloch, J. 2005. Integrating a global agro-climatic classification with bioregional boundaries in Australia. Global Ecology and Biogeography 14(3): 197-211.

Professor Tony Jakeman

Director, Integrated Catchment Assessment and Management Centre

Professor

Integrated environmental assessment, hydrological and water quality modelling, and environmental education and training

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Career Brief

Tony Jakeman received his Bachelor of Science with first class honours in Pure and Applied Mathematics from the University of NSW in 1973. He was awarded his PhD in Applied Numerical Analysis from ANU in 1976. After holding a short-term postdoctoral position in Statistics at the University of Florida, he returned to ANU in 1976 and joined the Centre for Resource and Environmental Studies. In 1997 he helped set up the Integrated Catchment Assessment and Management (iCAM) Centre, now comprising 10 research staff, and 12 PhD students, supported by a small, dedicated group of technical and management staff.

Tony has been President of the Modelling and Simulation Society of Australia and New Zealand (www.mssanz.org.au) since 1987 and was Foundation President of the International Environmental Modelling and Software Society (www.iemss.org), until 2006. He is on the Board of numerous academic journals and is Editor-in-Chief of Environmental Modelling and Software, an Elsevier journal with an Impact Factor of 1.992. He has undertaken invited study leave at Stanford, Cambridge and Lancaster Universities, as well as at the University of Western Australia, CSIRO Land and Water and the UK Institute of Hydrology (Centre for Ecology and Hydrology).

Professional Activities

Research interests are hydrology, environmental systems modelling and integrated assessment of river basin issues to promote more sustainable outcomes. The focus is on developing the relevant disciplinary tools and their integration for this assessment. This problem-oriented work is facilitated by a project focus and networking with other research groups and industrial partners in Australia and internationally.

He has supervised over 30 postgraduate students, predominantly at the PhD level and is regularly involved in the supervision of Honours and earlier year undergraduate students. He is co-convenor of MATH 3133/3134H, a 3rd year course in Environmental Modelling usually offered in second semester. He is the Coordinator of Postgraduate Coursework in the Fenner School.

Selected Publications

Jakeman, A.J., Voinov, A.A, Rizzoli, A.E and Chen, S. (eds) (in press) State-of-the-art and Futures in Environmental Modelling and Software. Elsevier.

Jakeman, A.J., Letcher, R.A. and Norton, J.P. 2006. Ten iterative steps in development and evaluation of environmental models. Environmental Modelling and Software, 21: 602-614.

Giupponi, C., Jakeman, A.J., Karssenberg, G. and Hare, M.P. (eds) 2006. Sustainable Management of Water Resources: an Integrated Approach. Edward Elgar Publishing, Cheltenham, UK, 361pp.

Croke, B.F., Merritt, W.S. and Jakeman, A.J. 2005.. A dynamic model for predicting hydrological response to land cover changes in gauged and ungauged catchments. J. Hydrology, 291:115-131.

Jakeman, A.J. and Letcher, R.A. 2003. Integrated Assessment and Modelling: Features, Principles and Examples for Catchment Management. Environmental Modelling and Software, 18: 491-501.

Dr Dominic Kain

Postdoctoral Fellow

Forest genetics and tree breeding

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Career Brief

Dominic completed a BSc (Forestry) with honours at the Australian National University in 1997. His honours research investigated the quantitative genetics of wood characteristics, and early selection, in Pinus radiata. His PhD research, at ANU and North Carolina State University, USA, examined the genetics of wood and growth traits in the Pinus elliottii x Pinus caribaea hybrid, in collaboration with the Queensland Forestry Research Institute. Dominic completed his PhD in early 2003, and was a geneticist with the CRC for Sustainable Production Forestry in Hobart, based at ANU, until late 2003. He is now a Postdoctoral Fellow supported by the Australian Council for International Agriculture Research (ACIAR).

Professional Activities

My research interest is in all aspects of the genetic improvement of trees, with a focus on breeding and selection strategies for inter-specific hybrids, and the genetic improvement of wood quality. Developing breeding objectives, integrating quantitative and molecular genetic selection technologies, and breeding eucalypts that tolerate dry and saline conditions are other topics I am working on collaboratively or developing research proposals to address.

Currently, my main activity is within an ACIAR-funded collaborative research project involving ANU, the CSIRO and its South African equivalent, the CSIR. The project aims to develop high performance eucalypts and eucalypt hybrids for marginal lands in south and eastern South Africa and southeastern Australia. Eucalypt hybrids, for example *E.grandis x E. camaldulensis*, often outperform both parental species in environments intermediate between those typical of the parents. My role in the project is to analyse data from eucalypt hybrid trials in South Africa - possibly the most extensive set of eucalypt hybrid trials in the world - to develop knowledge of the genetic mechanisms underlying hybrid performance. We are using this knowledge to develop efficient selection strategies for future improvement of the most promising species combinations.

I also supervise two postgraduate students in tree breeding, contribute to teaching courses in forest genetics at ANU and at the CSIR, South Africa, and present at conferences in the fields of quantitative genetics, wood quality improvement and hybrid breeding.

Selected Publications

Kain, D., Dieters, M.J., Harding, K.J., and Li, B. 2005.. Genetic parameters for wood quality and growth traits in Pinus elliottii var. elliottii, P. caribaea var. hondurensis, and their F1 hybrid. Canadian Journal of Forest Research (submitted).

Kain, D.P., Harding, K.J., Dieters, M.J. and Li, B. 2005.. Early selection and rapid field screening for genetic improvement of wood density and spiral grain in pines. Canadian Journal of Forest Research (submitted).

Kain, D.P. 2003.. Genetic parameters and improvement strategies for the Pinus elliottii var. elliottii x Pinus caribaea var. hondurensis hybrid in Queensland, Australia. PhD thesis, Australian National University, 460p.

Shepherd, M., Cross, M., Dieters, M.J., Harding, K., Kain, D. and Henry, R. 2003.. Genetics of physical wood properties and early growth in a tropical pine hybrid. Canadian Journal of Forest Research 33: 1923-1932.

Professor Peter Kanowski

Deputy Director

Professor of Forestry

Forest and environmental policy, forest genetics, forestry and environmental education

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Career Brief

Peter Kanowski is Professor of Forestry and Deputy Director of the Fenner School of Environment and Society. Peter was appointed the Chair of Forestry at ANU in 1995, after 7 years as Lecturer at Oxford University's Forestry Institute, and working as a forest manager and researcher in Queensland. He is a member of the Steering Committee of The Forests Dialogue, and was a 2007 FWPRDC Denis Cullity Fellow. Peter was a panel member of the 2003/4 Council of Australian Governments' National Inquiry into Bushfires, and of the Steering Committee for the ACT's post-bushfire Non-Urban Land Use Study in 2003; he chairs the technical committee advising the ACT Government on the selection of trees for the new Canberra international Arboretum.

Professional Activities

My research and teaching interests and activities cover both forest and environmental policy, and forest genetics. My work in policy addresses a range of topics, including plantation and farm forestry, forest conservation and management, and forest policy processes. My research in forest genetics began with Honours and Doctoral work in quantitative genetics and its implications for tree breeding strategies.

Some of my work in forest policy is now part of the research program of the Cooperative Research Centre for Forestry, for which I also chair the education program. I lead an ACIAR-sponsored research project addressing constraints to incorporating commercial tree growing into PNG farming system, and co-lead development of an Australian National Forestry Masters Program.

My teaching reflects my diverse interests: I coordinate or contribute to undergraduate and graduate courses in Australia's environment, forest and environmental policy, and forest genetics.

Selected Publications

Kanowski, P & H Murray. 2008. Intensively-managed planted forests: towards best practice. The Forests Dialogue, Yale. www.theforestsdialogue.org

McDermott, CL, B Cashore & P Kanowski. 2007. A global comparison of forest practice policies using Tasmania as a constant case. Global Institute of Sustainable Forestry, Yale Univ. GISF Research Paper 010. 64 p. www.yale.edu/gisf.

Whelan, R., Kanowski, P., Gill, M., Anderson, A. 2006. Living in a land of fire. Synthesis for 2006 Australia State of the Environment Report, Department of Environment & Heritage, Canberra. 22p. http://www.deh.gov.au/soe/2006/integrative/fire/index.html

Kanowski, PJ, Holzknecht, H and Perley, C. 2005. Oceania – islands of contrasts. Chapter 17 in: G Mery et al (Eds). Forests in the global balance: changing paradigms. IUFRO, Vienna. 280-302.

Ellis, S., PJ Kanowski and R Whelan. 2004. National Inquiry on Bushfire Mitigation and Management. COAG, Canberra. www.coagbushfireinquiry.gov.au

Dr Karen King

Research Fellow

Fire ecology, fire and carbon landscape simulation modelling, climate change

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Career Brief

In 1991 Karen graduated with a Bachelor of Applied Science in Medical Laboratory Science from the University of Canberra. From 1991-2000 she worked as a Technical Officer with the Developmental Physiology Group at the John Curtin School of Medical Research, ANU. Karen graduated with a Graduate Diploma in Resource and Environmental Science at ANU in 2000. In February, 2004, she completed a PhD at ANU titled 'Simulating the effects of anthropogenic burning on patterns of biodiversity'. She has completed a three year Postdoctoral Position with the Bushfire CRC, and an eighteen month Postdoctoral Position with the Australian Greenhouse Office.

Professional Activities

For the last couple of years I have been working on developing and implementing a landscape fire regime and carbon dynamics model. This work was initially funded by the Australian Greenhouse Office, and is now funded by the Department of Climate Change. The developed model incorporates both the landscape fire regime simulator FIRESCAPE, and the forest carbon accounting model FullCAM. This model is currently being used to investigate the impacts of a range of management and climate change scenarios on fire and carbon dynamics for a 2 million hectare study region in the high country of south eastern Australia. Outputs from this model provide useful insights into the potential implications of climate change on fire regimes for this region and demonstrate the consequential implications for carbon stocks and vegetation dynamics. Further, these outputs will inform the National Carbon Accounting System (NCAS) as well as land managers.

Selected Publications

King KJ, Bradstock RA, Cary GJ, Chapman J, and Marsden-Smedley JB (2008) The relative importance of fine scale fuel mosaics on reducing fire risk in south west Tasmania, Australia. International Journal of Wildland Fire, 17(3) 421-430.

King, KJ (2008) The relative importance of 'fine scale fuel mosaics' in reducing fire risk in southwest Tasmania, Australia. Buttongrass Moorland Management Conference Proceedings Australasian Plant Conservation. 16(3) 8-10.

King KJ, Cary GJ, Bradstock RA, Chapman J, Pyrke A and Marsden-Smedley JB 2006. Simulation of prescribed burning strategies in south-west Tasmania, Australia: effects on unplanned fires, fire regimes, and ecological management values. International Journal of Wildland Fire, 15(4) 527–540.

King KJ, Chapman J 2006. Using statistics to determine the effectiveness of prescribed burning. In Brown P, Liu S, Sharma, D (Eds) Contributions to Probability and Statistics – Applications and Challenges. Proceedings of the International Statistics Workshop. (World Scientific: Singapore)

Dr Emma Knight

Research Fellow

Statistical consulting and collaboration, design of research studies, statistical modelling and analysis.

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Career Brief

Emma Knight joined the Fenner School of Environment and Society in June 2007. Previously Emma has worked as a statistical scientist at the Bureau of Rural Sciences in the Department of Agriculture, Fisheries and Forestry and at the Statistical Consulting Unit at ANU. She has also lectured in Statistics at Charles Sturt University in Wagga Wagga. Emma has a degree in Statistics from the University of Adelaide and has recently completed her PhD on improved iterative schemes for REML estimation in linear mixed models.

Professional Activities

Emma has a strong enthusiasm for the application of statistical science to a wide range of scientific research problems. In the Fenner School, she enjoys collaborating with other researchers, applying statistics to solve complex quantitative problems in conservation and landscape ecology.

Selected Publications

Banks, S., Knight, E., Dubach, J. and Lindenmayer, D. 2008. Microhabitat heterogeneity influences offspring sex allocation and spatial kin structure in possums. Journal of Animal Ecology 77: 1250-1256

Knight, E., Barry, S., Summerson, R., Cameron, S. and Darbyshire, R. 2007. Designating areas for ballast water exchange. Bureau or Rural Sciences. Canberra.

Mitchell, I., Knight, E., Gissane, J., Tamhane, R., Kolli, R., Leditschke, A., Bellome, R. and Finfer, S. 2007.6 A phase II randomised controlled trial of intensive insulin therapy in general intensive care patients. Critical care and Resuscitation 8: 289-293

Knight, E., Park, T., Bromhead, D., Ward, P., Barry, S. and Summerson, R. 2006. Analyses of interactions between longline and recreational gamefish fisheries taking or tagging striped marlin off New South Wales. Bureau of Rural Sciences. Canberra.

Andrew, R., Wood, J., Knight, E., Peakall, R. and Foley. W. 2005. Marker-based quantitative genetics in the wild? The heritability and genetic correlation of chemical defences in Eucalyptus. Genetics 171: 1989-1998.

Dr Geraldine Li

Research Fellow

Risk, Natural Hazards, Integrated Research, Climate Change Impacts, Human Adaptation, Systems Methodology, Sustainability

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Career Brief

Geraldine Li completed an Honours Degree in Geophysics (Flinders, 1994); a Masters of Environmental Studies (Adelaide, 1998); and a PhD entitled Investigating Individual and Social Level Risk Adaptation in Human-Natural Systems (ANU, 2007). Previously she worked as an environmental geophysicist on a multi-hazard mapping project of Pacific cities at the South Pacific Applied Geoscience Commission (1999-2001) and as environmental analyst at AusAID where she developed the Environmental Management System for Australia's Aid Program (2001-2003).

Professional Activities

Her current research interests and activities include developing integrated systems approaches to risk, risk assessment, management and human adaptation. This involves introducing the dynamical systems thinking or 'integrative' paradigm into complex, interlinked human social and environmental problems.

Selected Publications

Li, G.M. and Dovers, S., 2008. Assessing the vulnerability and adaptive potential of Australian settlements to impacts of climate change and variability. The International Disaster and Risk Conference Proceedings. Davos, Switzerland, 25 - 29 August 2008.

Li, G.M., 2008. Tropical cyclone risk perceptions in Darwin, Australia: a comparison of different residential groups. Natural Hazards, DOI 10.1007/s11069-008-9269-8.

Li, G. M., 2007. Approaching Integrated Assessment of Climate Change Impacts on Urban Settlements. State of Australian Cities Conference Proceedings, Adelaide, 28 - 30 November 2007.

Teakle (Li), G., 2006. Past, Present and Future: Processes of Human Adaptation to Tropical Cyclone Risk in Darwin, Australia, in the International Geographical Union Conference Proceedings (3-7 July 2006), Brisbane, Australia.

Teakle (Li), G. M. R., 1998. Incentives for Earthquake Hazard Mitigation: A Case Study from Northern California (USA), in Disaster Management: Crisis and Opportunity, Hazard Management and Disaster Preparedness in Australasia and the Pacific Region, Volume 1. Proceedings of the Conference held at Cairns, 1-4 November 1998, eds D. King and L. Berry, Centre for Disaster Studies, James Cook University, Cairns, Australia.

Professor David Lindenmayer

Professor

Forest wildlife management and nature conservation

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Career Brief

Professor David Lindenmayer has made a major and sustained long-term contribution to the conservation of Australia's biodiversity and the ecologically sustainable management of Australia's natural environment over the past 24 years. He has established and maintained four large-scale research programs on biodiversity conservation and natural resource management in south-eastern Australia spanning forests, plantations, woodlands, and agricultural areas. Together these programs encompass over 90 research projects that have the common aim of identifying better ways of conserving biodiversity while at the same time enabling the ecologically sustainable use or management of key resources – native forest harvesting, plantation forestry, agricultural grazing and cropping – or managing fire regimes. He has published over 520 scientific articles and 20 books on many key topics in conservation biology, forest ecology and management, wildlife biology and environmental management. Through extensive scientific publications, numerous popular and semi-popular books and work with over numerous volunteers from many organizations, David's work has influenced government, non-government, conservation and industry organisations, as well as the general public.

Selected Publications

Lindenmayer, D. B., Burton, P., and Franklin, J.F. 2008.. Salvage logging and its ecological consequences. Island Press, Washington, D.C.

Lindenmayer, D. B., Dovers, S., Hariss Olsen and Morton, S. 2008.. 10 Commitments: Reshaping the Lucky Country's Environment. CSIRO Publishing, Melbourne.

Lindenmayer, D. B., Cunningham, R.B., McGregor, C., Crane, M., and Michael, D. The changing nature of bird populations in woodland remnants as a pine plantation emerges: results from a large-scale "natural experiment" of landscape context effects. (*Ecological Monographs*). (in press).

Lindenmayer, D. B., and Fischer, J. 2006. Habitat fragmentation and landscape change. Island Press: Washington D.C.

Lindenmayer, D. B., and Burgman, M. A. 2005. Practical conservation biology. 2nd ed. CSIRO Publishing: Melbourne.

Lindenmayer, D. B., Crane, M., Michael, D., MacGregor, C., and Cunningham, R. B. 2005. Woodlands: a disappearing landscape. CSIRO Publishing: Melbourne.

Lindenmayer, D. B., Foster, D., Franklin, J.F., Hunter, M., Noss, R., Schiemegelow, F., and Perry, D. 2004.. Salvage harvesting after natural disturbance. *Science*, 303, 1303.

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Dr Janette Lindesay

Fenner School Higher Degree Research Convener

Fenner School Honours Convener

Associate Professor

Climatology, climate variability and change science, climate vulnerability and adaptation

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Career Brief

Janette obtained her Honours degree in Geography, Postgraduate Teaching Diploma and Doctorate in statistical and dynamical climatology from the University of the Witwatersrand in Johannesburg. She came to ANU in 1993, where she continues to work in atmospheric science and climatology. She is a Deputy Director of the ANU Climate Change Institute.

Professional Activities

My principal research interests are in climatic variability during the period of instrumental record, and investigating climate change impacts and vulnerability. My current research focusses on low-frequency fluctuations in Australian rainfall in the context of the El Niño Southern Oscillation and other large-scale climate system influences, including the potential for deterministic and dynamical seasonal forecasting. My climate vulnerability research focuses on the climatological aspects of bushfires in Australia, and temperature and rainfall trends and extremes. I also contribute to informing the policy debate on drought.

In my undergraduate and postgraduate teaching I aim to develop students' understanding of atmospheric processes, weather and climate, and the role of climatic variability and change in Earth system processes and human affairs.

I chair the Atmosphere Reference Group for the ACT Region State of the Environment Report, and have been President of the Canberra branch of the Australian Meteorological and Oceanographic Society. I am a member of three professional meteorological societies, and am on the editorial boards of two international journals.

Academic Highlights

Co-convener of the ANU Climate Vulnerability and Adaptation Initiative.

Vice-Chancellor's Award for Excellence in Teaching (2007).

College of Science Award for Excellence in Teaching (2006).

Selected Publications

Lindesay, J.A. 2004. Climate and drought in the subtropics: the Australian example, in From Diaster Response to Risk Management: Australia's National Drought Policy, Botteril, L.C. and Wilhite, D.A. (eds), Springer, Dordrecht, pp. 15-36.

Lindesay, J.A. 2003. Fire and climate in Australia, in Australia Burning: Fire Ecology, Policy and Management Issues, Cary, G., Lindenmeyer, D. and Dovers, S. (eds), CSIRO Publishing, Melbourne, pp. 32-40.

Reason, C.J.C., Allan, R.J., Lindesay, J.A. and Ansell, T.J. 2000. ENSO and climatic signals across the Indian Ocean Basin in the global context: Part I, Interannual composite patterns, International Journal of Climatology, 20: 1285-1327.

Hobbs, J.E., Lindesay, J.A. and Bridgman, H.A. (eds). 1998. Climates of the Southern Continents: Present, Past and Future, John Wiley and Sons, Chichester, 297 pp.

Allan, R.J., Lindesay, J.A. and Parker, D.E. 1996. El Niño Southern Oscillation and Climatic Variability, CSIRO Publishing, Melbourne, 405pp.

Dr Bennett Macdonald

Research Fellow

Certified Professional Soil Scientist (Stage 3)
Soil-water-atmosphere interactions

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Career Brief

2003+ Research Fellow The Australian National University

2000-2003 Research Associate, University of New South Wales

1995-2000 University of New South Wales PhD

1991-1994 University of New South Wales BSc Hons I (Geography)

Professional Activities

At present I am investigating the interactions between surface and ground waters and the changing salinity within rivers in the east coast of Australia. This work is investigating the causes of increasing salinity in these catchments and the interactions with a changing climate. I am also researching the emission of greenhouse gases from lowland crops, principally sugarcane. This work explores the interactions between earth, air and water and the resulting flux of gases and solutes from these landscapes. Novel techniques are employed such as isotopic analysis and trace gas monitoring solutions. A key part of both areas of research is the development of policy and management solutions to address environmental problems caused by human endeavour.

Academic Highlights

2008 Science and Innovation Awards for Young People in Agriculture Fisheries and Forestry. Department of Agriculture Fisheries and Forestry Australia. Quantification of the drivers of nitrous oxide emissions from sugar cane agriculture.

2004-2007 Chief Investigator Sugar Research Development Corporation Grant "Use of artificial wetlands to treat cane drainage"

2003-2007 Chief Investigator on an ARC Linkage Grant "Reverting coastal acid sulfate soils to wetlands: Biogeochemical processes and environmental benefits"

2006 Science and Innovation Awards for Young People in Agriculture Fisheries and Forestry. Department of Agriculture Fisheries and Forestry Australia. Use of isotopic techniques to investigate surface and ground water interactions.

2006 Australian Soil Science Society Publication Award

Selected Publications

Lowe, A., Dovers, S., Lindenmayer, D., and Macdonald, B.C.T. (2008) Evaluation in environmental conservation: issues of adequacy and rigour. International Journal of Environment and Sustainable Development (accepted 31/08/08)

van Oploo P, White I., Macdonald, B.C.T. , Ford, P., and Melville, M.D. (2008) Pore Water Chemistry of Acid Sulphate Soils: Chemical Flux and Oxidation Rates. Geoderma (accepted 07/2008)

van Oploo P., White I, Macdonald, B.C.T., Ford P, and Melville MD, (2008). The use of peepers to sample pore-water in acid sulfate soils. Eur J. Soil Sci. (accepted 10/2007).

Green R, Waite TD, Melville MD, Macdonald BCT (2008) Effectiveness of an open limestone channel in treating acid sulfate soil drainage. Water Air and Soil Pollution 191, 293-304.

Green R, Waite TD, Melville MD, Macdonald BCT (2008) Treatment of acid sulfate soil drainage using limestone in a closed tank reactor. Water Air and Soil Pollution 191, 319-330.

Fischer J., Manning, A.D., Steffen, W., Rose, D., Daniell, K., Felton, A., Garnett, S., Gilna, B., Heinsohn, R., Lindenmayer, D.B., Macdonald, B.C.T., Mills, F., Newell, B., Reid, J., Robin, L., Sherren, K., and Wade, A., (2007). Mind the sustainability gap, Trends Ecol. Evol. (2007), doi:10.1016/j.tree.2007.08.016 (accepted 10/2007).

Macdonald B.C.T., White I, Astrom, M.E., Keene, A.F., Melville M.D., Reynolds, J.K., (2007). Discharge of weathering products from acid sulfate soils after a rainfall event, Tweed River, eastern Australia. Applied Geochemistry doi:10.1016/j.apgeochem. 2007.07.004, (accepted 09/2007).

Professor Brendan Mackey

Director, ANU WildCountry Research and Policy Hub

Professor

Environmental biogeography, environmental conservation, cross-disciplinary studies in sustainability

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Career Brief

Brendan has a PhD in plant ecology from The Australian National University. He has worked as a research scientist with the CSIRO and the Canadian Forest Service.

Professional Activities

Brendan is member of the IUCN Council in his role as a regional councillor for Oceania. He is also a member of the Earth Charter International Council; the Cape York Region Scientific and Cultural Advisory Committee; and the advisor committee of the TRIN CERF Hub. He co-convenes the first year course "The Blue Planet: an introduction to Earth System science" and convenes the graduate course "Climate Change Vulnerability and Adaptation".

Academic Highlights

Brendan spent the first half of 2008 on sabbatical in the USA with the Center for Humans and Nature. Amongst other things, he gave an invited presentation at a climate change symposium organised by the Chicago Botanic Gardens, and convened a symposium at an international conference on biological and cultural diversity hosted by the American Museum of Natural History.

Selected Publications

Mackey, G.B., Watson, J.E.M. and Hope, G. (2008) Climate change, biodiversity conservation, and the role of protected areas: an Australian perspective. Biodiversity 9:11-18.

Mackey, B. Berry S & Brown T. (2008) Reconciling approaches to biogeographic regionalization: a systematic and generic framework examined with a case study of the Australian continent. Journal of Biogeography. 35: 213–229

Mackey, B., Keith, H., Berry, S. and Lndenmayer D.B. (2008). Green Carbon: the role of natural forests in carbon storage. Part 1. A green carbon account of the eucalypt forests of south east Australia. ANU E Press, Canberra.

Shearman, P.L., Bryan, J.E., Ash, J., Hunnam, P., Mackey, B. and Lokes, B. (2008). The state of the forests of Papua New Guinea. Mapping the extent and condition of forest cover and measuring the drivers of forest change in the period 1972-2002. University of Papua New Guinea.

Mackey B.G, Woinarski J.C.Z.R., Nix H. and Trail B. 2007.. The Nature of Northern Australia: its natural values, ecology, and future prospects. ANU Electronic Press, Canberra

Mackey, B.G. 2005.. The Earth Charter and ecological integrity – a commitment to life on Earth. In. The Earth Charter in Action. Edited by Peter Corcoran. Published by Royal Tropical Institute (KIT) Publishers, Amsterdam. Pp 63-68,

Mackey B.G., Lindenmayer D.B., Gill A.M., McCarthy A.M. and Lindesay J.A. 2002. Wildlife, fire and future climate: a forest ecosystem analysis. CSIRO Publishing.

Dr Adrian Manning

Research Fellow

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Career Brief

Adrian Manning is a Research Fellow at the Fenner School of Environment and Society at The Australian National University. His research interests are in landscape ecology, restoration ecology, conservation biology and include aspects such as multi-scale ecology, the integration of conservation and production and the past, present and future of landscapes. Adrian undertook his PhD research on the Superb Parrot (Polytelis swainsonii). His main current project is the "Mulligans Flat – Goorooyarroo Woodland Experiment" – an ARC Linkage partnership with the ACT Government. The aim of this project is to investigate ways of improving box-gum grassy woodlands for biodiversity. To do this, different management treatments such as fire, addition of deadwood and control of kangaroo grazing are being applied. Adrian also publishes on concepts and issues in his field of interest.

Professional Activities

Landscape ecology, Superb Parrot ecology, restoration ecology, conservation biology, multi-scale ecology, integration of conservation and production - matrix management, past, present and future landscapes.

See http://people.anu.edu.au/adrian.manning/

Academic Highlights

Recently published paper in Biological Conservation was second most downloaded article between July and September 2006. Another paper in Restoration Ecology was in the top 10 downloaded articles in December 2006.

Selected Publications

Manning, A.D., Fischer, J., Felton, A., Newell, B., Steffen, W., Lindenmayer, D.B., in press, Landscape fluidity – a unifying perspective for understanding and adapting to global change, Journal of Biogeography.

Manning, A. D., Lindenmayer, D. B., Fischer, J., 2006, Stretch goals and backcasting: approaches for overcoming barriers to large-scale ecological restoration, Restoration Ecology, 14:4, 487-492.

Manning, A. D., Lindenmayer, D. B., Barry, S. C., Nix, H. A., 2006, Multi-scale site and landscape effects on the vulnerable superb parrot of south-eastern Australia during the breeding season, Landscape Ecology, 21:7, 1119-1133.

Manning, A. D., Fischer, J., Lindenmayer, D. B., 2006, Scattered trees are keystone structures - implications for conservation, Biological Conservation, 132, 311-321.

Manning, A. D., Lindenmayer, D. B., Nix, H. A., 2004, Continua and Umwelt: novel perspectives on viewing landscapes, OIKOS 104:3, 621-628.

Dr Chris McElhinny

Lecturer

Forest and woodland applied ecology, especially integrating sustainable management with conservation objectives.

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Career Brief

Chris was Schlich Medallist at the ANU Department of Forestry in 1998, and was awarded an ANU University Medal for his Honours Degree in Forestry in 1999. He completed a PhD in Resource and Environmental Management at ANU in 2004. Since July 2005 Chris has held the position of Lecturer in Forest and Woodland Ecology and Silviculture.

Professional Activities

My broad research interests are the role of vegetation structure in ecosystem function and the development and application of stand and landscape scale biometrics to improve the management of native vegetation.

Current projects include:

Calibrating the FullCAM Carbon Accounting Model for the effects of forest silviculture on nitrogen and carbon cycles in commercially managed native forests (Collaborating agency - Australian Greenhouse Office)

Developing metrics and user friendly tools for the sustainable management and restoration of privately owned dry sclerophyll forests and woodlands (Collaborating agency - RIRDC)

Modelling foliage vertical structure in Tasmanian Wet Forests (Collaborating agencies - Forestry Tasmania, Bushfire CRC)

Assessing the ecological condition of Victoria's State Forests using SFRI data (Collaborating agency - Victorian DSE)

The nature and function of log micro-environments in Yellow Box (Eucalyptus melliodora) – Red Gum (Eucalyptus blakelyi) woodland (Collaborating agencies - Environment ACT, CSIRO Entomology)

Litter dynamics in Yellow Box (Eucalyptus melliodora) – Red Gum (Eucalyptus blakelyi) woodland (Collaborating agency - Environment ACT)

A process model of coarse woody debris dynamics in Yellow Box (Eucalyptus melliodora) – Red Gum (Eucalyptus blakelyi) (Collaborating agency - Environment ACT)

Management options for the invasive native woody weeds Kunzea parvifolia and Kunzea ericoides (Collaborating agency - Southern Rivers CMA)

The structural complexity and composition of direct seeded revegetation in the Australian Capital Region (Collaborating agency - Greening Australia)

My teaching mirrors my research interests, and I convene and contribute to undergraduate courses concerned with forest and woodland ecology, and stand dynamic processes.

Academic Highlights

ANU College of Science Award for Individual Teaching Excellence 2007

Selected Publications

Gibbons, P., Briggs, S.V., Ayers, D., Seddon, J., Doyle, S., Cosier, P., C. McElhinny, C., V. Pelly, V., Roberts, K., 2009. An operational method to assess impacts of land clearing on terrestrial biodiversity. Ecological Indicators, 9, 26-40.

Gibbons, P., Briggs, S.V., Ayers, D.A., Doyle, S., Seddon, J., McElhinny, C., Jones, N., Sims, R., Doody, J. 2008. Rapidly quantifying reference conditions in modified landscapes. Biological Conservation, 141, 2483-2493

Scanlan, I., McElhinny, C., Turner, P. 2008. A methodology for modelling canopy structure: An exploratory analysis in the tall wet eucalypt forests of southern Tasmania. Old Forests, New Management International Conference, 17-21 February 2008, Hobart, Tasmania, Australia.

Brookhouse, M., Brack, C., McElhinny, C. 2008. The Distance to Structural Complement approach for expressing landscape-level pattern in forest structural complexity. Report for the Department of Sustainability and Environment, Victoria, 47p.

McElhinny, C., Gibbons, P. and Brack, C. 2006. An objective and quantitative methodology for constructing an index of stand structural complexity, Forest Ecology and Management, 235, 54-71.

McElhinny, C., Gibbons, P., Brack, C., and Bauhus, J. 2005. Forest and woodland stand structural complexity: its definition and measurement. Forest Ecology and Management, 218: 1-24.

Dr Wendy Merritt

Research Fellow

Environmental modelling, integrated assessment, water resources, forest inventory

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Career Brief

After completing a Bachelor of Science degree in Natural Resource Management at the University of Western Australia, Wendy Merritt undertook her PhD at the Centre for Resource and Environmental Studies (CRES) at The Australian National University (ANU). Wendy's thesis involved the development and testing of biophysical models for assessing land and water resource management options in rural catchments in northern Thailand. On completing her PhD, she worked for 13 months as a Post Doctoral Fellow at the Department of Forest Resource Management at the University of British Columbia (UBC) in Vancouver, before travelling around Canada for a few months. Research conducted at UBC involved the development of hydrologic models of the Okanagan Basin, a major horticultural and agricultural centre in British Columbia, and application of the models under scenarios of climate change. In October 2003 Wendy commenced an 18 month Post Doctoral Fellow position at the ANU School of Resources Environment and Society (SRES) which developed methodologies to estimate the extent of inaccuracies in large scale forest resource estimates and to gauge the sensitivity of scheduled yields to these inaccuracies. Since October 2003 she has been employed as a researcher at the Fenner School in the Integrated Catchment Assessment and Management (iCAM) centre.

Professional Activities

My research interests are in the broad field of resource assessment and modelling, particularly water and forest resources. Currently, I am working on Landscape Logic – a Commonwealth Environment Research Facilities (CERF) project funded by the DEWHA – and the development of Decision Support Systems (DSS) for the Narran and Gwydir wetlands in northern NSW for NSWE DECC. Landscape Logic aims to produce evidence based guidelines for decision-making by NRM regions. iCAM's research contribution is the integration of water quality and native vegetation research from project partners and development of decision support tools and techniques suitable for use in planning.

Selected Publications

Merritt, W.S., Alila, Y., Barton, M., Taylor, B., and Cohen, S. 2006.. Hydrologic response to scenarios of climate change in subwatersheds of the Okanagan Basin, British Columbia, Journal of Hydrology, 326, 79-108.

Merritt, W.S., Croke, B.F.W., and Jakeman, A.J. 2005. Sensitivity testing of a model for exploring water resources utilisation and management options, Environmental Modelling and Software, 20, 1013-1030.

Croke, B.F.W., Merritt, W.S., and Jakeman, A.J. 2004. A dynamic model for predicting hydrologic response to land cover changes in gauged and ungauged catchments. Journal of Hydrology, 291, 115-131.

Merritt, W.S., Croke, B.F.W., Jakeman, A.J., Perez, P., and Letcher, R.A. 2004. A biophysical toolkit for assessment and management of land and water resources in rural catchments in northern Thailand. Ecological Modelling, 171: 279-300.

Merritt, W.S., Letcher, R.A., and Jakeman, A.J. 2003. A review of erosion and sediment transport models. Environmental Modelling and Software, 18: 761-799.

Dr Frank Mills

Fellow

Chemistry and radiation in planetary atmospheres, Atmospheric remote sensing, Global/regional climate change impacts, Characterising surface ultraviolet radiation in Australia, Modelling the impact of aerosols and global/regional change on surface ultraviolet radiation in Australia

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Career Brief

After completing a Bachelor of Science in Engineering (Honors) degree at Princeton University in mechanical and aerospace engineering and a Master of Science degree at the California Institute of Technology (Caltech) in physics, he worked in Boston and Tokyo before returning to complete a PhD at Caltech in planetary science. Following postdoctoral research positions at Caltech, the University of California at Los Angeles (UCLA), and the Caltech Jet Propulsion Laboratory (JPL), he moved to ANU in 2003 and holds a joint appointment in the Research School of Physics and Engineering and the Fenner School of Environment and Society and is an affiliated member of the Planetary Science Institute. He was appointed a Fellow at ANU in January 2008.

Professional Activities

My current research is focused on understanding the chemistry of Venus' atmosphere and the effects of Australian aerosols on surface ultraviolet radiation. My past research has included laboratory calibration of infrared spectrometers and imagers; simulations of instruments and satellite mission operations; field tests of imaging spectrometers; numerical modelling of the chemistry in the atmospheres of Venus, Earth, and Io; spectroscopy of Venus, Europa, and Callisto; estimation of the ultraviolet properties of Australian aerosols; and interdisciplinary research on sustainability and climate change impacts. (See also http://www.rsphysse.anu.edu.au/ampl/research/planetary.php.)

Other activities:

Lecturer in EMSC3029 (Atmospheric and Ocean Modelling)

Member, ACT branch committee of the Australian Meteorological and Oceanographic Society

Member, organising committee for the AMOS 2010 conference

Academic Highlights

NASA New Investigator in Earth Science 2000

Supporting Investigator for ESA's Venus Express mission 2006

Selected Publications

First detection of hydroxyl in the atmosphere of Venus, G. Piccioni, P. Drossart, L. Zasova, A. Migliorini, J-C Gérard, F.P. Mills, A. Shakun, A. García Muñoz, N. Ignatiev, D. Grassi, V. Cottini, F.W. Taylor, S. Erard, and the VIRTIS-Venus Express Technical Team, Astronomy and Astrophysics Letters 483, L29 (2008)

Atmospheric composition, chemistry, and clouds, in Exploring Venus as a Terrestrial Planet, F.P. Mills, L.W. Esposito, and Y.L. Yung, eds. L.W. Esposito, E. Stofan, and T. Cravens, American Geophysical Union (2007).

Application of satellite and ground-based data to investigate the UV radiative effects of Australian aerosols, O.V. Kalashnikova, F.P. Mills, A. Eldering, and D. Anderson, Remote Sensing of Environment 107, 65 (2007).

OH column abundance over Table Mountain Facility, California: Intraannual variations and comparisons to model predictions for 1997 - 2001, F.P. Mills, R.P. Cageao, S.P. Sander, M. Allen, Y.L. Yung, E.E. Remsberg, J.M. Russell III, and U. Richter, Journal of Geophysical Research 108(D24), 4785 (2003).

Thermal infrared spectroscopy of Europa and Callisto, F.P. Mills and M.E. Brown, Journal of Geophysical Research 105(E6), 15051 (2000).

Dr Lachlan Newham

Research Fellow

Water quality modelling, spatial data analysis, environmental management

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Career Brief

Lachlan Newham has been employed at The Fenner School of Environment and Society since completing his a PhD at the then Centre for Resource and Environmental Studies in 2002. Lachlan's PhD research was focused on developing and assessing modelling tools used to prioritise management for water quality improvement. Prior to undertaking his PhD studies, Lachlan completed a BSc (Resource and Environmental Management) degree with Honours at the then School of Resources and Environmental Management.

Professional Activities

Lachlan's research interests are in the broad area of integrated assessment with a particular focus on water quality assessment, modelling and management. His research is currently focused on a project titled 'Integrating Economic Valuation and Water Quality Modelling for Improving Management of Coastal Catchments'. This ARC Linkage project is being undertaken with partners the Eurobodalla Shire Council and NSW Department of Environment and Climate Change. It aims to develop and apply an integrated assessment and management tool for managing coastal catchments. The project consists of three core components: development of biophysical models to predict water quality impacts under a wide range of conditions; economic evaluation of those impacts; and the integration of water quality and economic modelling in order to influence policy development and investment in environmental conservation and remediation.

Lachlan is the Treasurer of the Modelling and Simulation Society of Australia and New Zealand Inc.

Academic Highlights

Modelling and Simulation Society of Australia and New Zealand Inc. Early Career Research Excellence Award, 2005.

Selected Publications

J.L. Ticehurst, L.T.H. Newham, D. Rissik, R.A. Letcher and A.J. Jakeman 2007. 'A Bayesian Network Approach to Assess the Sustainability of Coastal Lakes', Environmental Modelling and Software.

J. Drewry, L.T.H. Newham, R.S.B. Green, A.J. Jakeman and B.F.W. Croke 2006. 'A review of nitrogen and phosphorus export to waterways: context for catchment modelling', Marine and Freshwater Research.

L.T.H. Newham, A.J. Jakeman and R.A. Letcher 2006 'Stakeholder Participation in Modelling for Integrated Catchment Assessment and Management: An Australian Case Study in Participation', International Journal of River Basin Management, vol. 4(3), pp. 1-13.

L.T.H. Newham, R.A. Letcher, A.J. Jakeman and T. Kobayashi 2004. 'A Framework for Integrated Hydrologic, Sediment and Nutrient Export Modelling for Catchment-Scale Management', Environmental Modelling and Software, vol. 19, pp.1029-1038.

L.T.H. Newham, J.P. Norton, I.P. Prosser, B.F.W Croke and A.J. Jakeman 2003. 'Sensitivity Analysis for Assessing the Behaviour of a Landscape-Based Sediment Source and Transport Model', Environmental Modelling and Software, vol. 18, pp. 741-752.

Dr Jack Pezzey

Senior Fellow

Global and national economic sustainability and growth, and market mechanisms of emissions control, with special reference to global warming

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Career Brief

Since 1987, Jack Pezzey has held research fellowships at the Universities of Colorado, Bristol and London, and a lectureship at the University of York, before joining the ANU Centre for Resource and Environmental Studies (now part of the Fenner School) in 1999.

Professional Activities

My research covers two main areas. One (which I also teach) is the economics of sustainability and growth of national income, which hinges on limits to substitutability of human-made capital and knowledge for environmental resources in producing output and wellbeing. The other is on political and economic comparisons of taxes and tradable permits for controlling polluting emissions. The two areas combine when studying the control of greenhouse gas emissions in the 21st century in order to limit global warming.

Further personal details, links to publications, course details, etc are available at: http://people.anu.edu.au/jack.pezzey

Academic Highlights

In 2002, with Quentin Grafton, I founded the ANU Economics and Environment Network. In 2003-04, my PhD student Frank Jotzo (who completed in 2006) and I received a grant from the Hewlett Foundation through Stanford University to study the use of flexible country targets for abating greenhouse gas emissions.

Chair of supervisory panel of Greg Buckman http://fennerschool.anu.edu.au/people/pgstudents/buckmang.php and Qinghong Pu.

Founder member, Economics and Environment Network http://een.anu.edu.au/

Selected Publications

Pezzey, John C.V., Frank Jotzo and John Quiggin 2008. "Fiddling while carbon burns: why climate policy needs pervasive emission pricing as well as technology promotion." Australian Journal of Agricultural and Resource Economics, Vol 52 No 1, 97-110.

Jotzo, Frank and John C.V. Pezzey 2007. "Optimal intensity targets for greenhouse gas emissions trading under uncertainty." Environmental and Resource Economics, 38, 259-284.

Pezzey, John C.V., Nick Hanley, Karen Turner and Dugald Tinch 2006. "Comparing augmented sustainability measures for Scotland: is there a mismatch?" Ecological Economics, Vol 57, 60-74.

Pezzey, John C.V. and Michael A. Toman 2005. "Sustainability and its economic interpretations." In R.D. Simpson, M.A. Toman and R.U. Ayres, eds., Scarcity and Growth: Natural Resources and the Environment in the New Millennium, 121-141. Washington D.C.: RFF Press.

Pezzey, John C.V. 2004. "One-sided sustainability tests with amenities, and changes in technology, trade and population." Journal of Environmental Economics and Management, Vol 48 No 1, 613-631.

Dr Carmel Pollino

Research Fellow

Risk and integrated assessment for natural resource management and conservation purposes

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Career Brief

Carmel has a Bachelor of Applied Science with honours in Biology 1996 from RMIT University, a PhD in aquatic toxicology 2001 from RMIT University and a Masters in environmental law 2006 from Macquarie University. Before joining ANU as a research fellow in September 2006, Carmel spent 2 years as a postdoctoral fellow at the City University of Hong Kong and four years as a research fellow at Monash University.

Professional Activities

My research interests include the development of risk assessment and integration assessment methods and seeing these implemented for natural resource management and conservation purposes. This has involved activities such as: undertaking participatory processes to identify system values and communicate assessment findings; developing probabilistic models to quantify linkages between management, natural changes and processes, and system values (including identifying key uncertainties, knowledge and data gaps); undertaking capacity-building to improve understanding of models, building of models and adaptive development of models; and having both assessment outcomes and models adopted into future decision-making to better inform and improve natural resource management and conservation. Carmel is currently working on 2 major projects: Landscape Logic (a Commonwealth Environment Research Facility project) and Climate Change in the NSW Central West. Carmel is supervising postgraduate students and teaching a course in Bayesian networks. Carmel also maintains an interest in environmental toxicology.

Selected Publications

Pollino, C.A, White A. and Hart, B.T. 2007. Development and application of a Bayesian decision support tool to assist in the management of an endangered species. Ecological Modelling 201, 37-59

Pollino, C.A., Woodberry, O., Nicholson, A.E., Korb, K.B. and Hart, B.T., 2007. Parameterisation of a Bayesian network for use in ecological risk management. Environmental Modelling & Software 22, 1140-1152

Pollino, C.A., Georgiades, E. and Holdway, D.A. 2007. Use of the Australian crimson-spotted rainbowfish (Melanotaenia fluviatilis) as a model test species for investigating the effects of endocrine disruptors. Environmental Toxicology and Chemistry 26

Hart, B.T. & Pollino, C.A. (2008) Increased use of Bayesian network models will improve ecological Risk Assessments. Human and Ecological Risk Assessment, 14, 851-853.

Rosenkrantz, R.T., Pollino, C.A., Nugegoda, D., & Baun, A. (2008) Toxicity of water and sediment from stormwater retarding basins to Hydra hexactinella. Environmental Pollution, In press.

Mr John Reid

Senior Lecturer

Visual fine arts: production, education, research

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Career Brief

John Reid has a humanities degree from ANU, a masters of fine arts from UNSW and professional qualifications in graphic design. Held an ANU Creative Arts Fellowship (1977-79). Joined the Canberra School of Art in 1978. As a visual artist, works with photography, performance and collage to address human rights and environmental issues. Developed award winning School of Art Field Studies program and is founding co-ordinator of Environment Studio. Research includes software development for remote supervision of field research (FieldScreen™ Research Project) and procedures for artist engagement with rural community management of natural resources (Engaging Visions Research Project <www.engagingvisions.com.au>). Joined the Fenner School 2008 and continues to conduct programs at School of Art.

Professional Activities

Graphic design: book, typeface and logo design. Visual arts: exhibited nationally and internationally. Integrated professional practice with teaching by exhibiting with students in 21 exhibitions on the aesthetic visualisation of place and environmental issues in 17 regional centres mainly in the Murray Darling Basin.

Academic Highlights

Designed display typeface, Process, Letraset International's Letragraphica Range (1973). Designed School of Art logo (1979). ANU Creative Art Fellowship exhibition From the Armchair. An essay in Medium Detail, (1981). Sustained national media coverage for artworks dealing with political disappearances (Collage, 1984 -) and forest conservation (Fishman of SE Australia, 1992 -) <www.fishman.com.au>. Project collaborations culminating in exhibitions with ANUgreen –- A Thousand Colours. Visual Art for a Green ANU (2000) and ANU National Institute for Environment – Factor of Ten. A Future Worth Having (2002). Establish National Environment Bank (2002) <www.neb.com.au>. Carrick citation for student learning (2006). Awarded (with CPAS) ANU School of Art's first ARC Linkage (2006).

Selected Publications

Valerie A Brown, 2008 Leonardo's Vision. A guide to collective thinking and action, Rotterdam: Sense Publishers. Documentation of artwork.

Reid, J., Carpenter, D., & Meehan, B., 2006 Art for Earth's Sake: creative and interdisciplinary collaborations for sustainability in the tertiary sector. In W.Filho. D.Carpenter (Eds.) Sustainability in the Australasian University Context, Frankfurt: Peter Lang Publishers.

R Steller. (ed.) 2005, Monga intacta. A Celebration of Monga Forest and its Protection, Canberra: Robin Steller. Fine art photographs, pp 40, 41, 42, 47. Also, chapter contribution: J Reid Worshipping in Monga Cathedral pp 38 – 44.

D Connell. (ed.) 2002, Uncharted Waters, Murray-Darling Basin Commission, Canberra. Fine art photographs, pp xii, 83, 108.

Dr Ida Aju (Daju) Resosudarmo

Postdoctoral Fellow

Natural resource governance, natural resource decentralization/devolution

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Career Brief

Daju has a chemical engineering degree (BSc and Honours equivalent) from Bandung Institute of Technology, Indonesia and a Masters degree in International Development from Cornell University, USA. Prior to undertaking her PhD she was a scientist and a Program Leader at the Center for International Forestry Research (CIFOR). She obtained her PhD from the Fenner School in 2008. Daju's research interests includes natural resource management and governance, specializing in particular on Indonesia.

Professional Activities

Daju conducted research on Indonesia's deforestation, population and migration as they relate to forests, the impacts of Indonesia's economic crisis on forests and the livelihood of forest-dependent farmers, and decentralization. She is currently working on natural resource governance under Indonesia's decentralization and at Crawford School of Economics and Government, also at The Australian National University, on REDD (Reducing Emissions from Deforestation and Degradation).

Selected Publications

Barr, C., I.A.P Resosudarmo, A. Dermawan, and J. McCarthy (eds). 2006. Decentralization of Forest Administration in Indonesia: Implications for Forest Sustainability, Economic Development and Community Livelihoods. Bogor, Indonesia: Center for International Forestry Research

Resosudarmo, I.A.P. 2004. Closer to people and trees: Will decentralization work for the people and the forests of Indonesia? The European Journal of Development Research 16(1):110-132.

Colfer, C.P. and I.A.P Resosudarmo (eds.) 2002. Which Way Forward: People, Forests, and Policymaking in Indonesia. Washington DC: Resources for the Future.

Sunderlin, W.D., A. Angelsen, D.P. Resosudarmo and A. Dermawan. 2001. Economic crisis, small farmer well-being, and forest cover change in Indonesia. World Development 29(5):767-782

Dr Libby Robin

Senior Fellow

(also Senior Research Fellow, Centre for Historical Research, National Museum of Australia)

Environmental History, Museum studies, History of Biodiversity Sciences, Conservation in Arid Zone Australia, World History, History of Australian Science, Ecological Humanities

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Career Brief

Libby Robin has a joint appointment in the Fenner School and as Senior Research Fellow in the Centre for Historical Research, National Museum of Australia. She is an environmental historian with a PhD in the History of Science (Melb). She coordinates the Australasian Environmental History Network.

Professional Activities

Editorial boards include Historical Records of Australian Science, Environment and History (UK), Australian Humanities Review and Transforming Cultures (India);

National Committee for the History and Philosophy of Science (Australian Academy of Science)

Academic Highlights

2007 NSW Premier's History Prize in Australian History for How a Continent Created a Nation;

2003 Victorian Premier's Literary Prize for Science Writing for The Flight of the Emu

Selected Publications

Robin, Libby, Robert Heinsohn and Leo Joseph (eds) Boom and Bust: Bird Stories for a Dry Country, Melbourne, CSIRO Publishing, 2009

Libby Robin 'New science for sustainability in an ancient land', in Sverker Sörlin and Paul Warde (eds) Nature's End: History and the Environment, London and New York, Palgrave MacMillan 2009.

Robin, Libby 'The Eco-humanities as literature: a new genre?, Australian Literary Studies, 23(3), May 2008, 290-304.

Robin, Libby and Mike Smith, 'Australian Environmental History: Ten Years On', Environment and History, 14(2), May 2008, 1-4.

Libby Robin How a continent created a nation (UNSW Press, 2007).

http://www.unswpress.com.au/isbn/0868408913.htm

Libby Robin and Will Steffen, 'History for the Anthropocene' History Compass 2007

http://www.blackwell-compass.com/subject/history/section_home?section=hico-world

Libby Robin, 'Weird and wonderful: The first objects of the National Historical Collection' reCollections 1(2) September 2006. http://recollections.nma.gov.au/issues/vol_1_no_2/papers/weird_and_wonderful/

Libby Robin, 'Migrants and Nomads' in Tim Sherratt, Tom Griffiths and Libby Robin (eds) A change in the weather: climate and culture in Australia, (National Museum of Australia Press 2005), 42-53

Mandy Martin, Libby Robin and Mike Smith Strata: deserts past, present and future (Mandy Martin, 2005)(see: http://cres.anu.edu.au/strata/introduction.html)

Libby Robin and Daniel Connell, 'History and the environment', in R.Q. Grafton, Libby Robin and R.J. Wasson (eds) Understanding the Environment: Bridging the Disciplinary Divides (UNSW Press 2005) 8-22

Dr Deborah Rose

Senior Fellow

Indigenous environmental knowledge and philosophy, settler landscapes and relationships to place, social and environmental justice, cross-culturalising animal ethics.

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Professional Activities

Indigenous ecological knowledge and ethics; Indigenous and Settler landscapes in Australia and other settler societies; post-colonial possibilities for social and ecological justice; cross-culturalising animal ethics.

Australia is home to a remarkable diversity of systems of knowledge about the ecology of this unique continent. Indigenous knowledge systems and systems based on western scientific tradition have often been seen as the most distant poles on a continuum that ranges from 'myth' to 'fact'. Recent analysis undermines this dichotomy, and research in Australia shows that indigenous ecological knowledge on this continent is detailed, localised, and well grounded in empirical observations. In addition, indigenous knowledge is embedded within a system of ethics that is oriented toward long-term balance and mutual care in relationships between people, other living things, and life support systems.

Indigenous knowledge about Australian ecosystems has been built up over long periods of time through fine grained observation and complex systems of ordering memory, place, event, and significance. In the form of relatively fragmented bits of information, indigenous ecological knowledge has contributed to Australian field sciences, and is an important part of co-management schemes.

This research project aims to document and analyse indigenous ecological knowledge, practice, and philosophy in two regions of north Australia: the floodplains and the savanna. In addition to numerous published articles, the first large-scale study is now published: Country of the Heart: An Indigenous Australian Homeland, with Sharon D'Amico, Nancy Daiyi, Kathy Deveraux, Margy Daiyi, Linda Ford and April Bright, Aboriginal Studies Press.

The significance of this research is founded in the fact that the sharing of ecological knowledge and philosophy is an important response to the environmental crises in which all our lives are entangled. The sharing can go both ways, for in contemporary Australia there are numerous knowledge systems that can help to recover the capacity of ecological systems to nourish human and other forms of life.

Selected Publications

2002 Country of the Heart: An Indigenous Australian Homeland, Aboriginal Studies Press, Canberra. With Sharon D'Amico, Nancy Daiyi, Kathy Deveraux, Margy Daiyi, Linda Ford and April Bright.

2000 [1992] Dingo Makes Us Human; Life and land in an Australian Aboriginal Culture. Cambridge University Press. New in Paperback. Winner of the 1992/3 Stanner Prize.

1998 Tracking Knowledge: Studies in North Australian Landscapes, edited with Anne Clarke, NARU, Darwin.

1996 Nourishing Terrains; Australian Aboriginal views of Landscape and Wilderness, Australian Heritage Commission, Canberra.

1995 Country in Flames; Proceedings of the 1994 symposium on biodiversity and fire in North Australia. Biodiversity Unit, Department of the Environment, Sport and Territories and the North Australia Research Unit, The Australian National University, Canberra and Darwin.

1991 Hidden Histories. Black Stories from Victoria River Downs, Humbert River, and Wave Hill stations, North Australia. Aboriginal Studies Press. Winner of the 1991 Jessie Litchfield Award for Literature.

Dr Jacki Schirmer

Research Fellow

Socio-economic impact assessment, participatory resource management, environmental conflict, forest policy, fisheries policy

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Career Brief

Jacki has been undertaking research on social dimensions of natural resource management for ten years. After completing undergraduate degrees in Forestry and Economics at ANU, she worked as a consultant in forest economics at FORTECH (now URS Forestry) before returning to ANU to complete her doctorate. From 2003 to 2005 she was a scientist with the Social Sciences Program of the Bureau of Rural Sciences. She has co-taught ENVS3007/6021 'Participatory Resource Management' since 2003. Jacki currently leads the 'Communities' project of the Cooperative Research Centre for Forestry.

Professional Activities

My research interests are primarily in the area of studying the socio-economic impacts of changes in land use and access to natural resources such as fish stocks. I have spent most of the last eight years undertaking research examining the social issues that emerge as a result of rapid land use change – for example, disputes and conflicts arising out of land use change from traditional agriculture to plantations.

I have a particular interest in exploring and extending approaches to combining the use of qualitative and quantitative methods to examine impacts of land use and resource access change. My current work with the CRC for Forestry 'Communities' and 'Land Use Change' projects is further exploring how the use of statistics from sources such as the ABS can be usefully combined with qualitative data drawn from residents of rural communities to obtain a more comprehensive understanding of impacts of land use change.

Selected Publications

Schirmer, J., Williams, K., Borschmann, P. and Dunn. C. 2008. Living with land use change: different views and perspectives. Report prepared for the Socio-economic impacts of land use change study. March 2008. CRC for Forestry Technical Report 180. CRC for Forestry, Hobart. (refereed)

Schirmer, J. 2008. Forestry, jobs and spending: forest industry employment and expenditure in Tasmania, 2005-06. CRC for Forestry Technical Report 184, June 2008. CRC for Forestry, Hobart.

Schirmer, J. 2007. Plantations and social conflict: exploring the differences between small-scale and large-scale plantation forestry Small-scale forestry 6(1): 19-33

Schirmer, J.; Parsons, M.; Charalambou, C.; and Gavran, M. 2005. Socio-economic impacts of plantation forestry in the Great Southern region of WA, 1991 to 2004. Report produced for FWPRDC Project PN04.4007. Forest and Wood Products Research and Development Corporation, Melbourne URL: < http://www.affashop.gov.au/product.asp?prodid=13290>

Schirmer, J. and Casey, A.M. 2005. Social Assessment Handbook: A guide to methods and approaches for assessing the social sustainability of fisheries in Australia. FRDC ESD Reporting and Assessment Subprogram Publication No. 7. Bureau of Rural Sciences and Fisheries Research and Development Corporation, Canberra. URL: < http://www.affashop.gov.au/product.asp?prodid=13168>

Tonts, M. and Schirmer, J. 2005. Managing social conflict in the tree plantation industry: growing consensus or deepening divisions In Cryle, D. and Hillier, J. (eds) Consent and consensus: politics, media and governance in twentieth century Australia. API Network, Perth. pp. 275-296.

Schirmer, J. and Tonts, M. 2003.. Plantations and sustainable rural communities. Australian Forestry 66: 67-74

Dr Kate Sherren

Research Fellow

Sustainable landscapes, information visualisation, higher education

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Career Brief

I am a Geographer, with experience using spatial science in contentious resource management settings, such as forestry in Canada and urban water management in New Orleans. Following several years teaching spatial science at Charles Sturt University in Bathurst and Wagga Wagga, I undertook a doctorate at ANU on university teaching and research for sustainable development, completed in 2008. See more details at http://people.anu.edu.au/kate.sherren.

Professional Activities

I am currently a research fellow on a project called 'Sustainable Farms', contributing spatial analysis, landscape visualisation and social investigation skills like photo elicitation interviews to a multidisciplinary project team. The goal is to find ways to integrate production and conservation activities and help generate sustainable grazing landscapes. See http://fennerschool-research.anu.edu.au/sustfarms for more details.

Academic Highlights

In 2007, I collaborated with Joern Fischer and Stephen Dovers to write the grant that won us Commonwealth Environment Research Facilities 'Significant Project' funding for 'Sustainable Farms' from the Department of Environment, Water, Heritage and the Arts.

Selected Publications

Sherren, K., Dovers, S., Fischer, J. and Schirmer, J. 2008. Leverage points for reversing paddock tree loss in Upper Lachlan grazing landscapes, Ecological Management and Restoration, Vol. 9, No. 3.

Sherren, K. 2008. A history of the future of higher education for sustainable development, Environmental Education Research, Vol. 14, No. 3, pp. 238-56.

Sherren, K. 2007. Is there a sustainability canon? An exploration and aggregation of expert opinions, The Environmentalist, Vol. 27, No. 3, pp. 341-47.

Sherren, K. 2006. Core issues: Reflections on sustainability in Australian university coursework programs. International Journal of Sustainability in Higher Education. Vol. 7, No. 4, pp. 400-13.

Sherren, K. 2004. Overconsultation breeds contempt: Lessons in participatory watershed planning from the restoration of the Mississippi Delta, Louisiana, USA. in Planning Metropolitan Landscapes - Demands, Approaches, Solutions, G. Tress, B. Tress, B. Harms, P. Smeets & A. van der Valk (Eds), DELTA Series 4, Wageningen University, Netherlands.

Mr Darren Sinclair

ARC Research Fellow

Environment and safety: regulation, law and policy

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Career Brief

Darren completed a Bachelor of Science (Hons) at the University of Sydney in 1990. He then worked for the Commonwealth Department of Industry, Science and Technology for six years. During that time he had responsibility for developing environmental policy from an industry perspective, including the creation of a national scheme to phase out the use of ozone depleting gases in industry, and representing Australia at international climate change negotiations (pre-Kyoto). In particular, he was involved in the development of the policy of 'joint implementation', the precursor to an international carbon-trading scheme. In 1995 and 1996 Darren completed a Master of Environmental Law at The Australian National University, and subsequently took up a position as Senior Research Associate at The Australian Centre for Environmental Law, in the Faculty of Law at the Australian National University. In that capacity, he worked on a number of environmental regulation and policy research projects, and was a consultant to several government agencies and industry associations. He has been a Research Fellow at the Fenner School since mid 2003.

Professional Activities

I am currently involved in an Australian Research Council funded research project investigating the safety, health and environmental performance of the mining sector (in conjunction with the National Occupational Health and Safety Commission).

Selected Publications

Books, reports and chapters:

Gunningham, N. and Sinclair, D. 2002. Leaders and Laggards: Next Generation Environmental Regulation, Greenleaf, UK.

Gunningham, N and Sinclair, D. 2002. Environmental Partnerships: Combining Sustainability and Commercial Advantage in the Agricultural Sector, Rural Industries Research Development Corporation, Canberra

Kanowski, P., Sinclair, D. and Freeman, B. 2000. Establishing Comparability and Equivalence amongst Forest Management Certification Schemes, Agriculture, Fisheries and Forestry – Australia, Canberra.

Articles:

Gunningham, N. and Sinclair, D. 2005. "Regulating Intensive Agricultural Pollution" Australian Journal of Environmental Management, Vol 12.

Gunningham, N. and Sinclair, D. 2005. "Policy instrument choice and diffuse source pollution" Journal of Environmental Law, Vol 17, No 1.

Sinclair, D. 1997. "Self-regulation Versus Command and Control? Beyond False Dichotomies" Law & Policy, Vol 19, No 4.

Dr Jenifer Ticehurst

Research Fellow

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Career Brief

After completing a BSc (Resource and Environmental Management) with Honours at The Australian National University in 1996 Jenifer worked as a technical officer with CSIRO (Division of Environmental Mechanics), NSW Agriculture and then CSIRO (Division of Plant Industry), experiencing research in the treatment of sewerage waste water through crop irrigation, sustainable grazing systems, and wheat and rice crop breeding. She completed her PhD in conjunction with CSIRO (Division of Land and Water) and CRES (The Australian National University) in 2004, investigation hillslope hydrology as it effects locating tree belt plantations to utilise excess water. Since completing her PhD Jenifer has worked at the Fenner School in the Integrated Catchment Assessment and Management (iCAM) group.

Professional Activities

Jenifer's research interests include soil science, hydrology, agricultural systems and modelling, and more recently integration techniques and decision support tools for natural resource management. Key research projects include the development of decision support tools to assist in the sustainable management of coastal lakes in NSW, and using Bayesian networks to assist Australia's NRM regions in targeting their investments to better meet their natural resource management targets. A new project will investigate the impacts of climate and land use change on water yield in the upland Murray River Catchments using several modelling techniques.

Academic Highlights

Recommendation for a student prize at the 2003 MODSIM conference in Townsville.

Selected Publications

Ticehurst, J.L. R.A. Letcher, D. Rissik (in press), Integration modelling and decision support: a case study of the Coastal Lake Assessment and Management (CLAM) tool, Mathematics and Computers in Simulation.

Ticehurst, J.L. H.P. Cresswell, N.J. McKenzie and M.R. Glover 2007., Interpreting soil and topographic properties to conceptualise hillslope hydrology, Geoderma, 279-292.

Ticehurst, J.L. L.H. T. Newham, D. Rissik,, R.A. Letcher, and A.J. Jakeman 2007., A Bayesian network approach for assessing the sustainability of coastal lakes, Environmental Modelling and Software, 22: 1129-1139.

Ticehurst, J.L., H.P. Cresswell, and A.J. Jakeman 2003., Using a physically based model to conduct sensitivity analysis of subsurface lateral flow in south-east Australia, Environmental modelling and software, 18: 729-740.

Professor Ian White FTSE

Professor

Ground and Surface Water Resources and Land Use Impacts

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Career Brief

1974-1996 Senior Principal Research Scientist CSIRO Centre for Environmental Mechanics

1995 -2001 Director, Water Research Foundation of Australia

1997-pres Visiting Lecturer, Department of Civil Engineering, Australian Defence Forces

Academy, Duntroon ACT

1994-present, Member Editorial Board UNESCO- Cambridge University. Press International Hydrology Series.

2006-present, Chair, Aquaculture Industry Research Advisory Committee

2006 - present, UNESCO Group IV representative on the Governing Board of the UNESCO-IHE Institute for Water Education, Delft, The Netherlands

Professional Activities

Major research area is the sustainable, integrated management of water and related land resources with emphasis on catchments and groundwater systems, particularly in coastal small island situations and research interests in the prediction and measurement of the downstream impacts of climate and land use change on the availability and quality of surface and groundwater. He has expertise in rainfall infiltration, modelling saturated/unsaturated flow, acidification of coastal and inland streams, salinisation of streams, impacts of water quality on ecology, sustainability of water extraction from shallow groundwater systems in coastal areas, safeguarding urban water supplies and hydrology and water management in small islands and coastal floodplains, vulnerability and adaptation to global change

Academic Highlights

Our book on Inter-Basin Water Transfer examines inter-basin water transfer projects in countries with the diverse geographical, climatic, economic, and policy regimes in Australia, United States, Canada, China and India, countries. The first part of the book explores the challenges in water resources and discusses the key issues in inter-basin transfers. The second part examines water resources of Australia, the driest inhabited continent. The third part explores inter-basin transfer projects in the United States, Canada, China and India, examining their benefits and impacts within these nations' contrasting economies and governance systems. The book concludes by highlighting the successes and failures of the cases examined, and provides pointers for the future of inter-basin transfer in meeting the world's urgent and growing water demands.

Our team research on the impacts of Canberra's devastating 2003 bushfires on the Cotter water supply catchment found surprisingly there was that there were no significant changes in annual upper catchment water yield following both the 1983 and 2003 fires. The 2003 fires caused unprecedented increases in turbidity, iron and manganese, by up to thirty times previous events in the upper catchment storages. These increases caused disruptions to water supply and resulted in the construction of a major water filtration plant to address turbidity and other water quality problems. While natural revegetation in the upper Cotter has lead to rapid improvements in water quality within 18 months, the area of former pine plantations in the lower Cotter continues as a major sediment source.

Our integrated research on managing acid discharges in estuarine areas in eastern Australia has involved researchers, farmers, state and local government participates and has resulted in mandatory best management practices for the NSW Sugarcane Industry and helped lead to the National Strategy on the Management of acid sulfate soils.

Dr Jeff Wood

Fellow

Applications of statistics

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Career Brief

Jeff Wood is an accredited statistician and has an M.A. in Mathematics from Cambridge University, an M.Sc. in Statistics from the University of Wales and a Ph.D. in Mathematical Statistics from the University of Birmingham, U.K. He has over 40 years experience of statistical consulting, including 28 years with CSIRO in Canberra. He joined the ANU Statistical Consulting Unit in 2001, and since

May 2006 he has been part of the Fenner School.

Professional Activities

Jeff Wood has extensive practical experience of applying statistics in many disciplines including ecology, agronomy, horticulture, forestry, soil science and road safety research.

His contributions to projects have ranged from relatively limited involvement to major contributions leading to co-authorship of papers with his collaborators. His collaborators have included Honours and Ph.D. students at several universities, early career researchers at Charles Sturt University, senior and junior staff of CSIRO, as well as clients from a variety of other private and public sector organizations. He has served the Statistical Society of Australia and the International Biometric Society in various roles, and is currently Applications Editor of the Australian and New Zealand Journal of Statistics.

Selected Publications

Wood, J.T. (2005), Selected topics in biometry, in Biometrics, edited by Susan R. Wilson and Conrad Burden, in Encyclopedia of Life Support Systems (EOLSS), Developed under the auspices of the UNESCO, Eolss Publishers, Oxford, UK, [http://www.eolss.net]

Wood,J.T. Williams,E.R. and Speed,T.P. (1988) Non-orthogonal block structure in two-phase designs. Australian Journal of Statistics 30A, 225-237.

Silverman,B.W. and Wood,J.T. (1987) The nonparametric estimation of branching curves. Journal of the American Statistical Association 82, 551-558.

Wood,J.T. Carpenter,S.M. and Poole,W.E. (1981) Confidence intervals for ages of marsupials determined from body measurements. Australian Wildlife Research 8, 269-274

Wood,J.T. (1976) The use of environmental variables in the interpretation of genotype-environment interaction. Heredity 37, 1-7.

Dr Jürgen Bauhus

Adjunct Professor

Silviculture, forest dynamics, nutrient cycling

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Career Brief

Jürgen studied Forestry in Freiburg, Vienna, and Göttingen and worked in Germany and Canada before he worked in the ANU Forestry Program between 1996 and 2003. Since June 2003 he has held a professorship and the Chair of Silviculture in the Faculty of Forest and Environmental Sciences at Freiburg University, Germany. His research focuses on ecology and silviculture of native forests, carbon and nutrient cycling, dynamics of mixed-species stands, structural diversity and coarse woody debris. He is section editor of the European Journal of Forest Research, Associate Editor of the Canadian Journal of Forest Research and an associate of the Cooperative Research Centre for Greenhouse Accounting. At Freiburg University, he is directing the International PhD Program "Forestry in Transition", the German-French binational PhD program in "Risk Management in Forestry", and the new international MSc course "Forests, Environment and Bioresourcs".

Professional Activities

My research interests are primarily in the effects of forest management practices on forest ecosystem properties and processes, in particular forest structure, eco-physiology of trees and carbon and nutrient cycling.

Current projects:

An ARC funded project in collaboration with State Forests NSW aims at "Guiding early silvicultural interventions through predicting canopy and crown dynamics in plantations of sub-tropical eucalypts". Specifically the project investigates the plasticity of green crowns of different species as affected by stand density, and the response of trees to green pruning (see also PhD student Philip Alcorn).

European Union Project with partners in Spain, The Netherlands, Brazil, Ecuador, Peru and Bolivia examining the role of smallholders in the sustainable management of forested landscapes in the Amazon basin.

European Union Project with partners in India and The Netherlands investigating the importance of plantations in a "crowded world", in particular in the provision of ecosystem goods and services. This also includes the development of a graduate course on this topic.

Exploring the use of Near-Infrared-Spectroscopy in fine-root studies. In particular, this DFG-funded project investigates the quantification of fine roots and the separation of the fine roots of different species using spectral properties of these tissues.

Determining the decay rates of coarse or woody debris of the most important central European tree species. Decay rates will be quantified by measuring respiration and mass loss in different decay phases and the process modelled in relation to climatic variables and log properties.

A number of PhD projects such as "Litter decomposition in mixed species of beech and spruce", "Tree growth in logged-over rainforest in south-east Kamerun" and "The effects of different fire regimes on soil fertility and vegetation diversity in dry dipterocarp forests in Thailand".

My teaching covers forest dynamics, silviculture and ecosystem management at undergraduate and postgraduate levels (see: http://www.waldbau.uni-freiburg.de/Mitarbeit/bauhus.html)

Selected Publications

Forrester, D.I., Cowie, A.L., Bauhus, J., Wood, J.T., Forrester, R.I. 2006. Effects of changing the supply of nitrogen and phosphorus on growth and interactions between Eucalyptus globulus and Acacia mearnsii in a pot trial. Plant and Soil 280: 2677-277.

O'Hara, C.P., Bauhus, J., Smethurst P.J. 2006. Role of light fraction soil organic matter in the phosphorus nutrition of Eucalyptus globulus seedlings. Plant and Soil 280, 127-134.

Forrester, D. I., Bauhus, J. , Cowie, A.L. 2005.. Nutrient cycling in a mixed-species plantation of Eucalyptus globulus and Acacia mearnsii. Canadian Journal of Forest Research 35: 2942-2950.

Hopmans, P., Bauhus, J., Khanna, P.K., Weston, C. 2005. Carbon and nitrogen in forest soils: Potential indicators for sustainable management of eucalypt forests in south-eastern Australia. Forest Ecology and Management 220: 75-87.

McElhinny, C., Gibbons, P., Brack, C., Bauhus, J. 2005. Forest and woodland stand structural complexity: Its definition and measurement. Forest Ecology and Management 218, 1-24

Dr Sandra Berry

Visiting Fellow

ANU WildCountry Research and Policy Hub

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Career Brief

Sandy grew up in Bundanoon, southeast NSW and Toowoomba, southeast Queensland where she obtained an Associate Diploma in Laboratory Techniques from the Darling Downs Institute of Advanced Education. For a decade she worked as a laboratory technician in a range of research institutions. An interest in bushwalking led to a deepening interest in the Australian vegetation and the physiology of plants, and undergraduate studies at Macquarie University.

After completing an Honours degree Sandy came to ANU in 1988 to work as a Technical Officer with the Ecosystem Dynamics Group in the Research School of Biological Sciences. After several years of providing support for field related research she enrolled in a PhD, finally producing her magnum opus: A study of the relationships between climate, carbon dioxide and the vegetation over the Australian continent at the present and the Last Glacial Maximum in 2002. This led to a 3 year post-doctoral fellowship at RSBS with the Cooperative Research Centre for Greenhouse Accounting, followed by her current 3 year appointment at the Fenner School.

Professional Activities

My research is supported by an ARC Linkage Grant between ANU and the Wilderness Society through the WildCountry project. It is concerned with investigating how vegetation cover and productivity changes over time over the whole of Australia, and the impact that this may be having on animal, and particularly bird, distributions. I am particularly interested in how plants and the vegetation respond to environmental change, particularly the direct effect on photosynthesis of the increasing concentration of carbon dioxide in the atmosphere, and the consequences of the vegetation response for the fauna.

Selected Publications

Berry, S.L. and Roderick, M.L. 2006. Changing Australian vegetation from 1788 to 1988: Effects of CO2 and land use change. Australian Journal of Botany, 54, 325-328.

Berry, S.L., Farquhar, G.D. and Roderick, M.L. 2005. Co-evolution of Climate, Vegetation, Soil and Air, In: Encyclopedia of Hydrological Sciences, pp. 177-192, Volume 1: Theory, organisation and scale (eds: Blöschl, G. and Sivapalan, M.). John Wiley and Sons Ltd, Chichester, United Kingdom.

Berry, S.L. and Roderick, M.L., 2005. Tansley Review - Plant water relations and the fibre saturation point. New Phytologist, 168, 25-37

Berry, S.L., Roderick, M.L. 2004. Gross primary productivity and transpiration flux of the Australian vegetation from 1788 to 1988 AD: effects of CO2 and land use change. Global Change Biology 10, 1884-1898.

Berry, S.L., Roderick, M.L. 2002. CO2 and land use effects on Australian vegetation over the last two centuries. Australian Journal of Botany 50, 511-531.

Berry, S.L., Roderick, M.L. 2002. Estimating mixtures of leaf functional types using continental-scale satellite and climatic data. Global Ecology and Biogeography 11, 23-40.

Dr Ross Bradstock

Visiting Fellow

Fire science and management, plant ecology

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Career Brief

Ross graduated with a B.Sc.(Hons) and PhD from the University of Sydney. He has worked as a research scientist with the NSW National Parks and Wildlife Service (currently NSW DEC) for over 20 years.

Professional Activities

Ross is on the Editorial Advisory Committee for the Australian Journal of Botany and the International Journal of Wildland Fire. He has given lectures on fire science and plant ecology at the University of Wollongong, ANU, University of Western Sydney, University of New South Wales and Macquarie University. In 2004, Ross was a visiting course convenor for ENVS3008 Fire in the Australian Environment with Dr Geoff Cary.

Ross is leader of the Bushfire CRC Project B.1.2. that includes Dr Geoff Cary, Dr Rod Weber (ADFA), Dr Malcolm Gill and Karen King, and is based in the Fenner School. The project will develop optimal solutions for the sustainable management of bushfire risk in a range of ecosystems. Ross' other research interests include plant species and community dynamics in mesic and semi-arid shrublands; investigation of heat related germination cues in seeds of a broad range of species; soil heating patterns in relation to fire and fuel characteristics; spatial modelling of risk of extinction of plant and animal populations; spatial modelling of bushfire risks posed to human assets; modelling of the sensitivity of fire interval and intensity in relation to ignition rates and weather; and the use of remote sensing to measure and model fire severity patterns.

Selected Publications

Bradstock, R.A. 2003. Protection of people and property: towards an integrated risk management model. In Australia Burning: Fire Ecology, policy and Management Issues (eds. G. Cary, D. Lindenmayer and S. Dovers) pp. 119-123, CSIRO Publishing, Melbourne.

Bradstock, R.A. and Kenny, B.J. 2003. Application of plant functional traits to fire management in a conservation reserve in south-eastern Australia. Journal of Vegetation Science 14, 345-354.

Bradstock, R.A. and Cohn, J.S. 2002. Demographic characteristics of mallee pine (Callitris verrucosa) in fire-prone mallee communities of central New South Wales. Australian Journal of Botany 50, 653-665.

Bradstock, R.A., Williams, J.E. and Gill, A.M. (eds.) 2002. Flammable Australia, The Fire Regimes and Biodiversity of a Continent. Cambridge University Press, Cambridge

Bradstock, R.A. and Cohn, J.S. 2002. Fire regimes and biodiversity in semi-arid mallee ecosysgtems. In Flammable Australia: The Fire Regimes and Biodiversity of a Continent, (Eds. R.A. Bradstock, J.E. Williams and A.M. Gill). pp. 238-258. Cambridge University Press, Cambridge.

Bradstock, R.A. and Cary G. 2001. What governs fire regimes? In "Bushfire 2001" pp. 182-189. Proceedings of the Australasian Bushfire Conference, July 2001, Christchurch NZ.

Bradstock, R.A. and Gill, A.M. 2001. Living with fire and biodiversity at the urban edge: in search of a sustainable solution to the human protection problem in southern Australia. Journal of Mediterranean Ecology 2: 179-195.

Emeritus Professor Valerie A. Brown AO

Visiting Fellow

Managing for local sustainability, collective decision-making, sustainability and health

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Career Brief

Valerie Brown holds an undergraduate degree in Ecology from Queensland University, a Graduate Diploma in Adult Learning from the University of Canberra, a Master of Education Degree in Integrative Studies from Endicott College, USA and the inaugural PhD in the University's Human Sciences Program, thesis topic "Holism in the University Curriculum". During 1979-84 she helped established the B.App.Sc.(Health Education) now B.Ed (Community Development) at the University of Canberra. From1984-89 she established and directed the Health Advancement Services of the ACT, and has since worked in projects to link public health and environmental governance in Australia, Malaysia, Fiji, and China, including setting up the National Local Government Environmental Research Network1989-95. Foundation Professor of Environmental Health at the University of Western Sydney 1996-2002, she is now Emeritus Professor from that University and Visiting Fellow and Director, Local Sustainability Project, at the Fenner School of Environment and Society, The Australian National University. In 1999 she was appointed an Officer of the Order of Australia for international and national contributions to public health and environmental health, and advocacy for and contributions to, sustainable development.

Professional Activities

I work with collaborative action research teams on locally sustainable responses to global social and environmental pressures. Past research programs have addressed the capacity for collective decision-making in the Local Government, community development, public health, and environmental management sectors; and establishing the Indigenous communities' environmental health workforce development program. My recent projects include principles for whole-of-community engagement in the Murray-Darling Basin; an interactive collective knowledge framework; and transformational change in regional collaboration for natural resource management.

PhD supervision includes theses on collective responses to complex socio-environmental issues in public health, environmental management, indigenous and community-based natural resource management, and urban planning.

Selected Publications

Brown Valerie A. 2008 Leonardo's Vision. A guide to collective thinking and action. SENSE Publishers, Rotterdam. 320pp

Brown Valerie A, Grootjans J, Ritchie J, Townsend M, and Verrinder G. 2005 Sustainability and Health: Supporting global ecological integrity in public health. Allen and Unwin. Sydney. Earthscan, London 360pp

Keen, M., Brown Valerie A. and Dyball, Robert 2005 Social Learning in Environmental Management. Earthscan, London. 250 pp.

Aslin, H and Brown, Valerie A. 2004 Towards Whole of Community Engagement.

A practical toolkit. Murray Darling Basin Commission, Canberra

Brown, Valerie A. Thinking globally and acting locally: Environmental health practice and climate change. Environmental Health 4. 1 2002, p5-13

Brown, Valerie A. Planners and the Planet: Reshaping the people/planet relationship: do planners have a role? Australian Planner 38 3 2001 67- 73

Brown, Valerie A Monitoring Changing Environments in Environmental Health in Environmental Health, 1.1 2001, p21-34

Brown, Valerie A. Stephenson. P., Nicholson, R., and Smith, J. 2001. Grass Roots and Common Ground: community-based environmental health action planning. Department of Health and Aged Care, Canberra 106pp.

Brown, Valerie A., Love, D., Griffiths, R., Powell, J., Murphy, A., and Walsmley, A. 2000. Western Sydney Regional State of the Environment Report 2000. Western Sydney Regional Organisation of Councils, Blacktown, 250pp.

Brown, Valerie A. 1996. Managing for Local Sustainability: policies, problem solving, people and place. National Office of Local Government, Canberra. 314pp.

Brown, Valerie A., Smith, D.I., Weissman, R., and Handmer, J. 1995. Risks and Opportunities: managing environmental conflict and change. Earthscan, London . 213pp.

Dr David Cook

Visiting Fellow

Invasive species management

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Professional Activities

David's research interests centre around biosecurity issues. Much of his work has involved invasive species affecting agricultural industries, ranging from vertebrates, invertebrates, weeds, pathogens, fungi, aquatic and marine species. He has completed economic analyses on many different incursion responses, and on-going management strategies for naturalised pest species of regional, state and national significance. He has also investigated the social welfare implications of quarantine restrictions for various pests and diseases, comparing the traditional gains from trade and the increase in expected damage from exotic species capable of utilising the trade link as an entry pathway. David maintains a keen interest in environmental issues, many of which concern species introductions. He will be working in the newly-formed CRC for National Plant Biosecurity to investigate multi-criteria analytical frameworks to include environmental and socio-economic information into the formation of invasive species risk management policies.

Selected Publications

Cook, D.C. 2005. The 'Paradox of Thrips': Identifying a Critical Level of Investment in Pest Exclusion Activities in Western Australia. Australasian Agribusiness Review 13, http://www.agrifood.info/Publications_Review/Cook.htm. ISSN 1442-6951.

Cook, D.C., Fraser, R.W., Wilby, A, Waage, J.K. and Mumford, J.D. 2004.. Beyond the Biosecurity Horizon. In: Research Papers: Economic Services Group and Regional Economists, R. Kingwell (Ed.). Government of Western Australia – Department of Agriculture, South Perth. pp. 87-98.

Cook, D.C. 2003.. Devising a Method of 'Expected Damage' Estimation for a Polyphagous Invertebrate Pest Exotic to Western Australia". In: Research Papers: Economic Services Group and Regional Economists, R. Kingwell (Ed.). Government of Western Australia – Department of Agriculture, South Perth. pp. 160-175.

Cook, D.C. and Fraser, R.W. 2002. Exploring the Regional Implications of Interstate Quarantine Policies in Western Australia. Food Policy 27 (2): 143-157.

Cook, D.C. 2001. An Economic Evaluation of the Benefits from Import Clearance Activities in Western Australia. Australasian Agribusiness Review 9, http://www.agribusiness.asn.au/. ISSN 1442-6951.

Dr Rosie Cooney

Visiting Fellow

Biodiversity conservation, management, and trade; environmental policy at international and national level; conservation and human livelihoods.

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Career Brief

Rosie completed Honours in Law and Science (in BoZo) at ANU in 1995 before carrying out a PhD in evolutionary ecology at Cambridge, the recipient of a Commonwealth Scholarship. Since completion in 1999 she has been working on biodiversity-related research and policy development for a range of international environmental organisations, including WWF, IUCN-The World Conservation Union, Flora & Fauna International, TRAFFIC, and ResourceAfrica. For WWF she led the development of policy on wildlife trade and CITES, and in recent years she has led an international collaborative initiative developing policy guidance on the implementation of the precautionary principle in biodiversity conservation and natural resource management.

Professional Activities

Current research focuses on two (linked) areas: how decision-making and policy responds to the uncertainty and complexity of ecological systems, examining in particular world trade rules as they relate to invasive alien species; and the potential for commercial sustainable use to contribute to biodiversity conservation and rural livelihoods, in Australia and overseas. She is an active member of the IUCN Species Survival Commission's Sustainable Use Specialist Group.

Selected Publications

Cooney R 2006. A long and winding road? Precaution from principle to practice in biodiversity conservation. In Von Schomberg R, Fisher L & Jones J (Eds) Implementing the Precautionary Principle: Perspectives and Prospects, Edward Elgar: Cheltenham, UK and Northampton, MA, US.

Cooney R & Jepson P 2006. The international trade in wild birds: what's wrong with blanket bans? Oryx 40(1): 18-23

Cooney R 2005. From promise to practicalities: the precautionary principle in biodiversity conservation and natural resource management. In Cooney, R and Dickson, B (Eds) Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use Earthscan, London, pp 3-17

Cooney R & Dickson B (Eds, 2005) Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use. Earthscan, London

Cooney R 2004. The Precautionary Principle in Biodiversity Conservation and Natural Resource Management: An issues paper for policymakers, researchers and practitioners IUCN Policy and Global Change series, No. 2. IUCN, Gland, Switzerland and Cambridge, UK

Cooney R 2003. Looking ahead – international wildlife trade regulation and enforcement. In Oldfield S The Trade in Wildlife: Regulation for Conservation. Earthscan, London, pp 196-204

Mr Ross Cunningham

Adjunct Professor

Statistical consulting and collaboration, design of research studies, statistical modelling, biological conservation, psephology, statistics in sport

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Career Brief

Ross Cunningham trained as a statistical consultant in CSIRO, Division of Mathematics and Statistics, Adelaide from 1969-1973 and moved to CSIRO Canberra in 1973 to practice. In 1982 he was appointed Statistical Consultant in the Faculties, ANU and was instrumental in establishing the highly regarded Statistical Consulting Unit of the Graduate School, ANU where he became Head. In 2001 he became a Visiting Fellow at CRES where he continues to work with Professor David Lindenmayer and others.

Professional Activities

I have a strong enthusiasm for and belief in statistical science, in particular data modelling and the design of research studies in many areas. My work usually involves establishing collaborative working relationships with researchers from a large range of scientific fields to gain sufficient understanding of their field to be able to communicate and solve problems effectively. I have made contributions in the intellectual conception, the design and implementation in many projects

Academic Highlights

Head, Statistical Consulting Unit, ANU 1982-2001

Discovery of a new species of possum

Published over 200 papers in referred journals in many scientific fields

Election night forecasting for Channel 10 and the ABC 1980-2000

Selected Publications

Cunningham, R.B., Lindenmayer, D.B., MacGregor, C. , Welsh, A and Barry, S (2005) Effects of trap position, trap history, microhabitat, and season on capture probabilities of small mammals in a wet eucalypt forest. Wildlife Research, 32 657-671

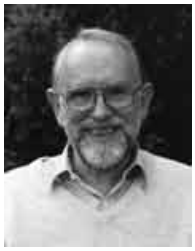
Cunningham, R.B., Lindenmayer, D.B., Nix, H.A. and Lindenmayer, B.D. (1999) Quantifying observer heterogeneity in bird counts. Australian Journal of Ecology 24, 270-277

Lindenmayer, D.B. , Cunningham, R.B, Viggers , K.L. and Donnelly, C.F. Morphological variation among populations of the Mountain Brushtail Possum, Trichosurus caninus Ogilby (Phalangeridae: Marsupialia). Australian Journal of Zoology (1995) 43 449-458

Cunningham, R.B., and Lindenmayer, D.B. (2005). Modeling count data of rare species: some statistical issues. Ecology, 86, 1135-1142.

Telford, R.D. and Cunningham, R.B. Sex, sport and body size dependency of haematology in highly trained athletes. Medicine and Science in Sport and Exercise (1991) 23(7) 788-794

Dr John Dargavel



Visiting Fellow

Forest history & forest policy

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Career Brief

John has degrees from the Universities of Edinburgh and Melbourne and from the Australian National University. He has worked in state and industrial forest management planning. He has taught forest economics and management, and has researched issues of forest policy. He now works on forest history.

Professional Activities

My research interests lie in forest history and in the political economy of the forest sector. I enjoy the variety of disciplines that forest history draws me into. I have just written a biography of Charles Lane Poole who was the Commonwealth's first forester. He ran the Australian Forestry School in Canberra from 1927 to 1944. Forestry training was transferred to the new Department of Forestry at ANU in 1965, and is now part of the Fenner School.

Selected Publications

John Dargavel 2008. /The Zealous Conservator: a life of Charles Lane Poole/. Crawley, WA: University of Western Australia Press.

Michael M. Roche and John Dargavel 2008. Imperial ethos, dominions reality: forestry education in New Zealand and Australia, 1910-1965. /Environment and History/ 14 (4): 523-43.

Dargavel, John. 2006. From exploration to science: Lane Poole's forest survey of Papua and New Guinea, 1922-1924. *Historical Records of Australian Science* 17: 71-90.

Dargavel, John 2005. Managing amidst conflict: the Huon District forests of Tasmania. In *In search of excellence*: *exemplary forest management in Asia and the Pacific* (Patrick B. Durst, Chris Brown, Henrylito D. Tacio and Miyuki Ishikawa). Bangkok: Regional Community Forestry Training Centre for Asia and the Pacific, FAO, pp. 239-250.

Dargavel John 2005. Charles Lane Poole in the transition from Empire. In Calver, Michael, Bigler-Cole, Heidi, Bolton, Geoffrey, Dargavel, John, Gaynor, Andrea, Horwitz, Pierre, Mills, Jenny, and Wardell-Johnson, Grant (eds) *A forest conscienceness*: *Proceedings of 6th National Conference of the Australian Forest History Society Inc*. Rotterdam: Millpress, pp.65-74.

Mr Clem Davis

Visiting Fellow

Climate trends of the Canberra region

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Career Brief

I am a retired meteorologist from the Bureau of Meteorology where I worked as an operational meteorologist (forecaster) for over 33 years. I worked for the Bureau in Western Australia, Northern Territory and the ACT and at the time of retirement in June 2005 I was Officer in Charge of the Canberra Meteorological Office, a position I had held for the previous 9 years.

Professional Activities

As a visiting fellow at the Fenner School, I am carrying out research in conjunction with Associate Professor Janette Lindesay into the climate trends of the local region as well as providing assistance to research students and staff on issues related to weather and climate. I will also be presenting occasional guest lectures and will be helping the Fenner School and ANU with external programs such as Science Week.

Mr Jim Douglas

Visiting Fellow

Economics of forests, the international dialogue on forests and development, and natural resources policy issues.

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Career Brief

Active since late 1970s in international forestry, with assignments for FAO as project manager, ANUTECH in consultancy, and the World Bank. Recently retired as Forests Advisor with the latter organization, after a 15 year engagement.

Professional Activities

Major responsibility for research, technical and operational programs in forests in the World Bank. Teaching and training responsibilities for technical and operational staff in the Bank, and in client country organizations; some short term teaching assignments at Johns Hopkins and Georgetown Universities in Washington, while serving with the Bank.

Selected Publications

Numerous reports, conference papers and technical reports authored while with the Bank; primary responsibility for drafting the new Bank Forest Sector Strategy, and Operational Policy, approved by the Board of Directors of the Bank in 2002, and published by the Bank.

I contribute to the academic mission of The Fenner School through research in the areas of interest identified, and teaching, supervision, discussion and government advisory assignments.

Dr A Malcolm Gill OAM

Visiting Fellow

Fire ecology, fire weather, fire behaviour, fire at urban-rural interfaces and fire management.

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Career Brief

After an undergraduate degree in agriculture Dr Gill completed MSc and PhD degrees in forest ecology at the same university, the University of Melbourne. Two years were then spent at the Harvard Forest of Harvard University in USA, studying north temperate tree growth, and a further two and a half years at Fairchild Tropical Botanical Garden in Miami, Florida studying tropical tree growth. Appointed in 1971 to the staff of CSIRO Plant Industry, he has spent over 35 years on matters relating to bushfires in the Australian landscape.

Professional Activities

My research interests have largely concerned the inter-related topics of fire ecology, fire weather, fire behaviour and fire management. Over the past few years my research has included matters relating to fires at the urban-rural interface and on catchments – stimulated by the widespread and severe fires around Canberra in January 2003.

Selected Publications

Gill, A.M. 2005. Landscape Fires as Social Disasters: An Overview of 'the Bushfire Problem' Global Climate Change B. Environmental Hazards 6, 65-80.

Gill, A.M., Good, R., Kirkpatrick, J., Lennon, J., Mansergh, I. and Norris, R. 2004. Beyond the Bushfires 2003, Environmental Issues in the Australian Alps. Australian Alps Liaison Committee, 2004.

Gill, A.M., Allan, G. and Yates, C. 2003. Fire-Created Patchiness in Australian Savannas. International Journal of Wildland Fire 12, 323-331.

Bradstock,R.A., Williams, J.E. and Gill, A.M. (eds) 2002. Flammable Australia: The Fire Regimes and Biodiversity of a Continent. Cambridge University Press.

Mackey, B., Lindenmayer, D.B., Gill, A.M., McCarthy, M.A. and Lindesay, J. 2002. Wildlife, Fire and Future Climates. CSIRO Publishing, Melbourne.

Gill, A.M. and Bradstock, R.A. 2003. Fire regimes and biodiversity: a set of postulates. In: G. Cary, D.B. Lindenmeyer and S. Dovers (eds) Australia Burning: Fire Ecology, Policy and Management Issues. Pp. 15-25. CSIRO Publishing, Melbourne.

Bradstock, R.A. and Gill, A.M. 2001. Living with fire and biodiversity at the urban edge: in search of a sustainable solution to the human protection problem in southern Australia. Journal of Mediterranean Ecology 2, 179-195.

Gill, A.M. 2001. A transdisciplinary view of fire occurrence and behaviour. In: G. Pearce and L. Lester (eds) Bushfire 2001. Proceedings of the Australasian Bushfire Conference, Christchurch, New Zealand. Pp. 1-12. Rotorua, New Zealand.

Gill, A.M. 2001. Economically destructive fires and biodiversity conservation: an Australian perspective. Biological Conservation 15, 1558-1560.

McCarthy, M.A., Gill, A.M. and Bradstock, R.A. 2001. Theoretical fire interval distributions. Int. J. Wildland Fire 10, 73-77.

McCarthy, M.A., Possingham, H.P. and Gill, A.M. 2001. Using stochastic dynamic programming to determine optimal fire management of Banksia ornata. J.Appl. Ecol. 38, 585-592.

Dr Roger Heady

Visiting Fellow

Wood anatomy, wood identification, electron microscopy

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Career Brief

On leaving school, Roger joined the RAAF and spent the following 12 years on various air-force stations in Australia and south-east Asia. In 1968, he came to Canberra to work as an electronics technician at the Satellite Tracking Station at Orroral Valley. In 1983, he commenced employment as a Senior Technical Officer at the ANU SEM Unit, which at that time was located in the Forestry Engineering Wing but was later moved to RSBS. In 1991, he began part-time research on the wood anatomy of Callitris (cypress pine) using electron microscopy, for which he was awarded a PhD in 1997. Roger was employed at ANU for 21 years until his retirement in 2004. On retirement he was appointed a Visiting Fellow in the Fenner School.

Professional Activities

My main interest is in the use of scanning electron microscopy (SEM) for the study of wood anatomy. I find that SEM is ideally suited to this application and there is ample scope for high-resolution microscopy studies of the wood of many Australian species. I am particularly interested in the wood anatomy of softwoods.

I conduct the Forest Products (ENVS4008) practical classes in wood identification.

Selected Publications

Burrows, G.E., P.F.Meagher and R.D. Heady. 2007. An Anatomical Assessment of Branch Abscission and Branch-base Hydraulic Architecture in the Endangered Wollemia nobilis. Annals of Botany 99: 609-623.

Heady, R.D. and P.D. Evans. 2005. Wood Anatomy of Actinostrobus (Cupressaceae). IAWA Journal 26(1): 79-92.

Heady, R.D., J.G. Banks and P.D. Evans. 2002. Wood Anatomy of Wollemi Pine (Wollemia nobilis, Araucariaceae). IAWA Journal 23(4): 339-357.

Heady, R.D. and P.D. Evans. 2000. Callitroid thickening in Callitris. IAWA Journal 21(3): 293-319.

Heady, R.D., Cunningham, R.B., Donnelly, C.F. and P.D. Evans. 1994. Morphology of warts in the tracheids of cypress pine (Callitris Vent.). IAWA Journal 15(3): 265-281.

Dr Ryde James

Emeritus Fellow

Plantation management, silviculture to improve wood quality

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Career Brief

I formally retired from the School in June 2006 but have retained an interest in the supervision of research students and some teaching activities. I am also co-Leader of a project, funded by ACIAR concerning the role of portable sawmills as used in the Pacific Countries of Papua and New Guinea and the Solomon Islands.

Professional Activities

My research falls into three categories: silviculture and the manipulation of plantation crops, forest planning, and urban forestry.

I am an associate member of the Hobart based CRC for Sustainable Forestry where my contribution involves membership of an ARC funded project investigating the response, through crown dynamics, of the application of silviculture to two species of sub-tropical eucalypts.

Selected Publications

Alcorn, P.J.; Pyttel, P.; Bauhus, J,; Smith, G.; Thomas, D. ; James, R. ; Nicotra, N. 2007:

Effects of initial planting density on branch development in four-year old plantation grown *Eucalyptus pilularis* and *E. cloeziana* trees. Forest Ecology and Management (in press)

Ryde James and Alberto Del Lungo, 2005: The potential for fast-growing commercial forest plantations to supply high value roundwood. Working Paper WP/33, Forest Resources Division, FAO, Rome (Italy)

Mr Ken Johnson

Visiting Fellow

Information systems, urban geography policy and planning

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Professional Activities

My interests now focus on the development of information and knowledge for policy and planing, taking account of contemporary decision making. This is based on experience in teaching and research in the urban and rural environments of Australia and Britain. One focus of my research is on the development of expert systems for the analysis of climatic variation at different temporal and spatial scales. Attention is centred an understanding the seasonal cycle and the deeper knowledge that this perspective affords of climate in concert with the traditional serial view of time series. Intelligent analytical systems are being developed to support this search. My other focus is the study of market dynamics in cities in time as well as for places within cities. This follows the logic that by seeking to understand markets, for property, labour and goods and services as well as capital, we might better understand what is driving contemporary urban development.

Selected Publications

Johnson, K.M. 1994. Creating place and landscape. Chapter 3 in Stephen Dovers, Australian environmental history. Oxford University Press, Melbourne.

Johnson, K.M. 1992. The AUSMAP atlas of Australia, Cambridge University Press, Melbourne.

Johnson, K.M. 1991. The long-term variation of seasonal rainfall in the Darling basin. Proceedings of the 2nd Australian conference on agricultural meteorology.

Johnson K.M. and H.C. Garnett. 1970. The economics of containerisation. Allen and Unwin, London

Dr Heather Keith

Visiting fellow

Forest ecology, greenhouse science, forest productivity and nutrition

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Career Brief

Heather has a BSc with First Class Honours in Physical Geography and the University Medal from UNSW and a PhD in forest and fire ecology from RSBS Ecosystems Dynamics Group, ANU. She has worked at the Waite Agricultural Research Institute in Adelaide, CSIRO Forestry in Canberra and Hobart, and the Institute of Terrestrial Ecology in England. Her experience in experimental studies in the laboratory and field covers a range of forest ecosystems.

Professional Activities

Recently, I have completed a major multi-disciplinary project on carbon cycling in native forests and the effects of climate variability and disturbance on ecosystem pools and fluxes. These results provide insights into the processes controlling the net biosphere – atmosphere exchange of carbon.

Currently, I am working on carbon sequestration in native forests with the aim of maximising the value of carbon sinks in vegetation and soils. This includes conserving the very large carbon stocks in undisturbed ecosystems and identifying land management options to increase carbon sinks. Quantifying the carbon sequestration potential of natural ecosystems will contribute the scientific understanding required for policy development and market assessment of post-Kyoto greenhouse accounting and emissions offsetting. I am interested in the biophysical processes that determine the vulnerability of carbon sinks in vegetation and soil, and applying this knowledge to adaptive land management. This involves conservation planning that accounts for climate change and variability.

My general research interests and experience include soil-microbe-plant-atmospheric processes of carbon, nutrient and water cycling and integration to whole ecosystem functioning; resource availability and forest productivity; integration across a range of scales; fire ecology; and sustainable management of natural resources.

Selected Publications

Keith H., Mackey B.G., Lindenmayer D.B. 2008. Re-evaluation of forest carbon stocks: temperate eucalypts are the world's most carbon-dense forests. Proc. Nat. Acad. Sci.

Mackey B.G., Keith H., Berry S.L., Lindenmayer D.B. 2008. Green Carbon: The role of natural forests in carbon storage. ANU E Press, Canberra.

Keith H., Leuning R.L., Jacobsen K.L., Cleugh H.A., van Gorsel E., Raison R.J., Medlyn B.E., Winter A., Keitel C. 2008. Multiole measurements constrain estimates of net carbon exchange by a Eucalypt forest. Agric. For. Met. DOI 10.1016.

Leuning R.L., Zegelin S., Jones K., Keith H., Hughes D. 2008. Horizontal and vertical advection of CO2 beneath a forest canopy. Agric. For. Met. 148:1777-1797.

van Gorsel E., Leuning R., Cleugh H.A., Keith H., Kirschbaum M.U.F., Suni T. 2008. Application of an alternative method to derive reliable estimates of nighttime respiration from eddy covariance measurements in moderately complex topography. Agric. For. Met. 148:1174 – 1180.

Dr Rebecca Kelly

Visiting Fellow

Integrated catchment assessment, modelling and decision support

E: a276411@anu.edu.au

Career Brief

Rebecca completed undergraduate degrees in Science and Economics at The Australian National University (ANU) in 1998, majoring in economics, econometrics and mathematics. Her honours year in mathematics focused on assessing the impacts of farm dams on stream flow yields in the Macquarie River basin, Australia. While completing her undergraduate degrees she also worked as a Research Economist at ACTEW, on water pricing, regulation and forecasting.

She then went on to complete her PhD at the Centre for Resource and Environmental Studies, also at ANU. Her PhD thesis at CRES involved the development of an integrated (economic, hydrological) model for assessing water allocation options in the Namoi River Basin, Australia. She has since worked on many integrated assessment projects including the IWRAM project, CLAM, WAdss and Landscape Logic.

Professional Activities

Rebecca's contributions to the field include: member of the Editorial Board of Environmental Modeling and Software; guest editor of Special Issues of two journals (Integrated Assessment; Environmental Modeling and Software); co-author of several keynote addresses; Secretary of the International Environmental Modeling and Software Society (iEMSs).

Academic Highlights

Career highlights include:

winner of the Best Student Paper prize in General Systems at MODSIM2001

recipient of an Early Career Research Excellence Award for Integrated Systems from iEMSs in 2004

winner of a Software Industry Award for Excellence in Software Design for the HICAM (Berowra CLAM tool) in 2007, jointly with Cardno Willing and Hornsby Shire Council.

Selected Publications

Letcher, R. A., Jakeman, A. J., and Croke, B. F. W. 2004.. "Model development for integrated assessment of water allocation options." Water Resources Research, 40: W05502.

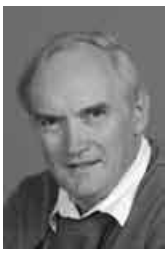
Letcher, R. A., Croke, B. F. W., Jakeman, A. J., and Merritt, W. S. 2006.. "An integrated modelling toolbox for water resources assessment and management in highland catchments: model description." Agricultural Systems, 89:106-131.

Letcher, R. A., Croke, B. F. W., Merritt, W. S., and Jakeman, A. J. 2006.. "An integrated modelling toolbox for water resources assessment and management in highland catchments: sensitivity analysis and testing." Agricultural Systems, 89:132-164.

Letcher, R. A., Croke, B. F. W., and Jakeman, A. J. 2007.. "Integrated Assessment modelling for water resource allocation and management - a generalised conceptual framework." Environmental Modelling and Software, 22: 733-742.

Letcher, R., and Jakeman, A. J. 2003.. "Application of an Adaptive Method for Integrated Assessment of Water Allocation Issues in the Namoi River Catchment, Australia." Integrated Assessment, 4(2): 73-89.

Dr Colin Matheson



Visiting Fellow

Quantitative, population and conservation genetics of forest trees, genetics of wood properties

T: +61 2 62818322
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Career Brief

Colin Matheson was born in the UK and moved to Melbourne with his family to complete his time at school. He came to Canberra to undertake his first degree at ANU in Botany and Zoology with Honours in Botany for a population genetics project on a small crucifer, after which he had a year working on eucalypts with Professor Lindsay Pryor at the Botany Department. He then returned to Melbourne for his PhD at La Trobe University on the genetics of the fruit fly Drosophila melanogaster. After that he came again to Canberra to take up a position with the then Department of National Development at the then Forest Research Institute in Yarralumla, Canberra, working on the genetics of trees. He then undertook a degree in Mathematics and Statistics at ANU part time. In 1975, the Institute joined CSIRO and Colin has remained working at Yarralumla on breeding pines, eucalypts and acacias in collaboration with various industry bodies.

Colin has been Chair of Research Working Group No 1 of the Australian Forestry Council and Chair or Co-chair of two Working Parties of the International Union of Forestry Research Organizations. He has conducted a number of consultancies to Zimbabwe, China and Malaysia, was a Visiting Scientist at Oxford University and the University of Florida and was Co-Director of the Oxford Forestry Institute summer course on forest research. In addition, he has been an Invited Speaker at a number of international conferences in various countries.

Professional Activities

My current interests are in forest genetics with some emphasis on the genetics of wood properties, conservation and disease resistance in radiata pine as well as the strategy of breeding programs themselves. I am working on projects aimed at finding the best ways of improving the quality of juvenile wood and reducing its incidence as well as acoustic methods of measuring wood stiffness. Another of my projects aims to breed softwoods for planting on sites drier than those traditionally used for radiata pine. Because of the new pine pitch canker disease in California and Mexico, new collections from candidate species in these regions is not possible, so I am working to conserve ex situ genetic resources of these species as well as to find genetic resistance to pitch canker. Because of its applied focus, my work has been funded for many years partly by private companies and cooperatives both in Australia and New Zealand.

Although employed in a research position, I have supervised graduate and Honours students for many years, both through ANU and Melbourne University. I have designed and delivered courses on tree breeding and on design and analysis of experiments, one of which culminated in a collaborative book. In addition, I have contributed occasional lectures to the ANU Forest Genetics course; teaching most of the 'Production Genetics' part of the Conservation and Production Genetics course at the Fenner School in 2003.

Selected Publications

Williams, E.R., Matheson, A.C. and Harwood, C.E. 2002. Experimental Design and Analysis for Tree Improvement. (2nd Ed, CSIRO: Melbourne).

Rogers, D.L., Matheson, A.C., Vargas-Hernández, J.J. and Guerra-Santos, J.J. 2004. Genetic Conservation of Insular Populations of Monterey Pine (Pinus radiata D. Don). Biodiversity and Conservation (In Press)

Wu, H.X. and Matheson, A.C. 2005.. Genotype by environment interactions in an Australia-wide radiata pine diallel mating experiment: implications for regionalised breeding. Forest Science 51, 29-40.

Dickson, R.L., Matheson, A.C., Joe, B., Ilic, J. and Owen, J.V. 2004. Acoustic segregation of Pinus radiata logs for sawmilling. NZ Jour. For. Sci. 34(2), 175-189.

Wu, H.X. and Matheson, A.C. 2004. General and specific combining ability from partial diallels of radiata Pine: Implications for utility of SCA in breeding and deployment populations. Theoretical and Applied Genetics 108, 1503-1512.

Matheson, A.C., Wu, H.X., Spencer, D., Raymond, C.A. and Griffin, A.R. 2002.. Inbreeding in radiata pine: III. Effect of inbreeding on age-age correlation and early selection efficiency. Silvae Genetica 51 (2-3), 115-122.

Ms Jennifer McMillin

Integrating Sustainability Project

Research Fellow
Education for Sustainability, Learning Communities, Environmental Education

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Career Brief

Jennifer received a Master of Environmental Science from ANU in 2007 while studying as a Rotary Ambassadorial Scholar representing Cleveland, Ohio USA. She is currently a research fellow in the Fenner School of Environment and Society collaborating on the Integrating Sustainability research project. Integrating Sustainability represents a collaboration between the Fenner School and ANUgreen, the university's corporate environmental management division.

Professional Activities

Jennifer's research interests include Education for Sustainability and interdisciplinary learning communities. The Integrating Sustainability project explores ways in which students can get involved in campus sustainability initiatives as part of an experiential learning experience. She also coordinates the Sustainability Learning Community (SLC), a group of students and staff from across the university who are interested in tackling day to day environmental and sustainability related issues on campus. The SLC provides exposure to local sustainability related issues by linking classroom theory to 'real life' problems faced at ANU.

Dr Barry Newell

Visiting Fellow

Complex adaptive systems, the dynamics of society-nature interactions, participative research and integrative management

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Career Brief

Dr Barry Newell is a physicist who has a background in dynamical systems, astrophysics, mathematics education, operations research, and management. He has 20 years' experience in astronomical research followed by some 14 year's work in industrial process improvement. Since 2003 he has been concerned with management in complex social-ecological systems.

Professional Activities

Dr Newell's research is concerned with the basic dynamics of complex adaptive systems, ways to develop shared understanding, and on practical approaches to integrative management. He is at present participating in:

1. The development of an Estuary Management Plan for Pambula Lake, on the NSW Far South Coast. In this project he is working with members of the local community, staff from various NSW Government agencies (particularly the Southern Rivers Catchment Management Authority (CMA) and the NSW Department of Environment and Climate Change), and the Bega Valley Shire Council to explore the use of a systems approach to estuary management.

2. The development and facilitation of a Local Leaders Program (LLP) in collaboration with staff of the Southern Rivers CMA and the Far South Coast Landcare Association. The LLP is an attempt to provide opportunities for community leaders to (a) develop their own leadership style and practical leadership skills, (b) develop an understanding of complex adaptive systems and how to work more effectively within them, and (c) build an active network of researchers, agency staff, local leaders, and community members who can support each others' efforts.

3. The ANU-UTS Climate-Energy-Water Links (CEWL) Project. This project is a response to the growing recognition that a better understanding of the links between climate, energy and water is essential in any attempt to formulate energy and water policies for more adaptable societies. The aim of the Project is to establish a new conceptual framework capable of supporting integrative policy making in the climate-energy-water arena.

Community Activities

Dr. Newell's work on the Pambula Lake Estuary Management Plan and the Southern Rivers CMA Local Leaders Program is focused strongly on collaboration with the local community. In addition, he is working to establish a community-based Participative Research Centre in collaboration with members of staff of the University of Wollongong's Bega Campus.

Selected Publications

Newell, B., Crumley, C.L., Hassan, N., Lambin, E.F., Pahl-Wostl. C., Underdal, A., and Wasson, R., 2005, "A conceptual template for integrative human-environment research", Global Environmental Change, 15, 299-307.

Proust, K., and Newell, B., 2006, Catchment and Community: Towards a management-focused dynamical study of the ACT water system, Final Report, Actew Project WF-30038. www.water.anu.edu.au/pdf/publications/Catchment%20and%20Community.pdf

Fazey, I., Proust, K., Newell, B., Johnson, B., and Fazey, J.A., 2006, "Eliciting the Implicit Knowledge and Perceptions of On-Ground Conservation Managers of the Macquarie Marshes", Ecology and Society, 11 (1): 25. www.ecologyandsociety.org/vol11/iss1/art25

Proust, K., Dovers, S., Foran, B., Newell, B., Steffen, W., and Troy, P., 2007, Climate, Energy and Water: Accounting for the Links, Discussion Paper, Land & Water Australia.

Newell B., Proust K., Dyball R., and McManus P., 2007, Seeing Obesity as a Systems Problem, New South Wales Public Health Bulletin, 18, 214–218. doi:10.1071/NB07028

Newell, B., Proust, K., Wiltshire, G., and Newell, D., 2008, Taking a Systems Approach to Estuary Management, in Proceedings of the 17th NSW Coastal Conference, Wollongong, NSW.

Professor Henry Nix AO

Visiting Fellow

Development of computer-based methods for ecosystem modelling and natural resources management

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Professional Activities

The development of explicit, computer-based methods for inventory, evaluation, planning and management of land and water resources. Major interests are ecosystem modelling with a particular emphasis on biophysical process models and the development of computer-based systems (BIOCLIM and UMWELT) for environmental analysis and prediction of potential distributions of target organisms.

Selected Publications

Mackey BG, Lesslie RG,* Lindenmayer DB and Nix HA. The role of wilderness and wild rivers in nature conservation. Pacific Conservation Biology 4: 182-185.

Nix HA. Modelling plant and animal distributions in Terra Australis (Australia and New Guinea) in space and time. In. Symposium on the relation of phylogeny and species distribution to spatial environmental parameters. 49th Annual Meeting, American Institute of Biological Sciences. 2-6 August 1998, Baltimore, Maryland USA.

Professor John Norton

Dynamic Systems Modeller, (iCAM/MSI)

Environmental modelling, uncertainty handling and assessment in complex models of dynamical systems, identification and state estimation, postgraduate training

Career Brief

BA in Mechanical Sciences, Cambridge, 1962 (MA 1966); DIC, PhD in Electrical Engineering, Imperial College, London 1967. Research Engineer, English-Electric-Leo Computers, London 1962-63. Research Fellow, UK Civil Service 1967-71. Lecturer/Senior Lecturer, Dept. of Electrical Eng., University of Tasmania 1971-79. Lecturer/Senior Lecturer/Reader/ Professor, Dept. of Electronic, Electrical & Computer Eng., University of Birmingham 1979-2004. Adjunct Professor, CRES, ANU 2002. Dynamic Systems Modeller (Level E), ANU 2003.

MIREE (Aust.) 1973-77, MIEAust. 1977-79, MIEE 1980, FIEE (now FIET) 1996, CEng.

Professional Activities

Research on identification of dynamical system models; state estimation; uncertainty handling; applications to environmental modelling, target tracking and guidance, gas-turbine modelling, process industries, automotive control and biomedicine. Current activity in sensitivity assessment of simulation models for environmental applications and constrained multi-criterion calibration of models. Head of Estimation and Control Group, U. of Birmingham 1985-2000. Consultant for Ferranti-Thompson Underwater Systems; British Gas; Defence Research Agency, Defford; Jaguar Cars Advanced Engineering; QinetiQ, Malvern; dstl, Farnborough; Murray-Darling Basin Commission.

Former Editor for Adaptive Control of Int. J. of Adaptive Control & Signal Processing. Editorial board member of IJACSP, IMechE J. Systems & Control Eng. and Env. Modelling & Software. Currently member of IFAC Technical Committee on Modelling, Identification & Signal Processing and Advisory Board of IFIP Working Group 5.11, Computers and Environment.

Selected Publications

J. P. Norton (2008), Algebraic sensitivity analysis of environmental models, Environmental Modelling & Software, 23(8), 963-972. doi:10.1016/ j.envsoft.2007-11-007

A. J. Jakeman, R. A. Letcher and J. P. Norton 2006. Ten iterative steps in development and evaluation of environmental models. Environmental Modelling and Software, 21(5): 602-614.

J. P. Norton, J. D. Brown and J. Mysiak 2006. To what extent, and how, might uncertainty be defined?, Integrated Assessment Journal, 6(1), 83-88

(http://journals.sfu.ca/int_assess/index.php/iaj/article/view/9/195).

J. P. Norton and F. T. Andrews 2006. Sensitivity and structure assessment of a software tool to gauge the ecological impact of flow scenarios, J. of Hydrology, 325, 325-339. Online doi:10.1016/j.jhydrol.2005.10.035.

J. P. Norton 2005. Results to aid applications of ellipsoidal state bounds, Mathematical & Computer Modelling of Dynamical Systems 11, 2 (special issue on Set-Membership Modelling of Uncertainties in Dynamical Systems, eds. F. L. Chernousko & B. T. Polyak), 209-224.

Adjunct Professor Paul Perkins

Adjunct Professor

Sustainable development policy and education, integrated catchment management, water trading, institutional and transitional dysfunction

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Professional Activities

Sustainable Development Policy and Education, Integrated Catchment Management, Water Trading, Institutional & Transitional Dysfunction

Chair of:

- The Barton Group (Environment Industry Development Action Agenda)
- National Environmental Education Council
- The Australian Science Festival
- and provides advice to federal, state and territory governments on Sustainability, Water Policy and Institutional Reform.

Selected Publications

Business Competitiveness - A New Direction in Water Industry Development 2003* - internet conference.

Public & Private Options in Australian Water Reform (et al -revised) 2003*.

Water and People - Prospects for the Canberra Region 2003. · Water and the ACT Consumer 2003.

Barriers to Sustainability: Political, Policy and Process 2003. · Geo-spatial Information Support for Water Resource Management 2003.

Canberra Wildfires 2003: Water Supply Impacts and Responses 2003., US Geological Society, Denver

Dr Katrina Proust

Visiting Fellow

Applied history, the dynamics of society-nature interactions, participative research and integrative management

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Career Brief

After working in the legal profession, science management, cultural heritage conservation and management, Katrina completed a PhD in 2004 at the ANU Centre for Resource and Environmental Studies. That research involved development of a way to integrate historical research with studies of feedback dynamics in social-ecological systems. Against a case study of irrigation salinity in British India and south-eastern Australia, her thesis explored the difficulties of learning from past mistakes in natural resource management (NRM).

Professional Activities

Katrina's work continues to focus on integrating history with investigations of feedback dynamics in human-environment relationships. It includes increasing community understanding of the ecological, social and cultural aspects of NRM; and developing practical skills in a systems-thinking approach in NRM. She is particularly interested in the interconnected systems of coastal communities, and would be pleased to hear from students thinking of studying problems in this area.

Community Activities

A member of the Pambula Lake Estuary and Catchment Group, on the NSW Far South Coast. The group is applying a systems approach, being developed by Newell and Proust, to support the development of an Estuary Management Plan for the lake.

Community Activities

A member of the Pambula Lake Estuary and Catchment Group, on the NSW Far South Coast. The group is applying a systems approach, being developed by Newell and Proust, to support the development of an Estuary Management Plan for the lake.

A member of a team that is designing a Local Leaders Program for the NSW Far South Coast. The program will be delivered in 2009 in partnership with the Southern Rivers Catchment Management Authority and Far South Coast Landcare Association.

Selected Publications

Fazey, I., K. Proust, B. Newell, B. Johnson, J.A. Fazey, 2006, Eliciting the Implicit Knowledge and Perceptions of On-Ground Conservation Managers of the Macquarie Marshes, Ecology and Society, 11(1):25. http://www.ecologyandsociety.org/vol11/iss1/art25

Proust, K. and B. Newell, 2006, Catchment and Community: Towards a management-focused dynamical study of the ACT water system. Research paper for ACTEW Corporation, Canberra http://www.water.anu.edu.au/pdf/publications/Catchment%20and%20Community.pdf

Proust, K., S. Dovers, B. Foran, B. Newell, W. Steffen, P. Troy, 2007, Climate, Energy and Water: Accounting for the Links. Discussion paper for Land & Water Australia http://www.lwa.gov.au/downloads/publications_pdf/ER071256.pdf

Newell, B., K. Proust, R. Dyball, P. McManus, 2007, Seeing Obesity as a Systems Problem, NSW Public Health Bulletin, 18(11-12): 214-218. http://www.publish.csiro.au/nid/226/issue/4094.htm

Proust, K. 2008, Salinity in Colonial Irrigation: British India and South-eastern Australia, Australian Geographer, 39(2): 131-147.

Newell, B., K. Proust, G. Wiltshire, D. Newell, 2008, Taking a Systems Approach to Estuary Management. Proceedings of 17th NSW Coastal Conference, Wollongong, 2008.

Dr Ejaz Qureshi

Visiting Fellow

Water Resources Management

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Career Brief

Ejaz obtained his B.Sc. and M.Sc. in Agricultural Economics from the University of Agriculture in Faisalabad, Pakistan and came to Australia in 1993 and obtained Masters in Agricultural Economic Studies and Ph.D. in Resource Economics and Environmental Management from the University of Queensland, Brisbane. During his doctoral program he also lectured and tutored at both undergraduate and postgraduate levels along with working as a Research Officer in an ARC funded project until the end of 1999. In 2000, he joined James Cook University in Townsville and worked as an Agricultural and Resource Economist with CRC Sustainable Sugar Production. After a few years, he moved to Canberra and joined ABARE as a Principal Research Economist. Since April 2004, Ejaz has been working as a Senior Economist and Policy Analyst in CSIRO first in the Division of land and Water and now in the Division of Sustainable Ecosystems.

Professional Activities

Ejaz's research interests centre around integrated modelling of biophysical and economic impacts of natural resource management decisions, economic instruments and regulatory approaches in natural resources management, computable general equilibrium modelling in examining impacts of natural resource management policies, mathematical modelling in water allocation decisions including conjunctive use of groundwater and surface water, asset fixity issues and optimal investment in agricultural industries as well as multi-criteria evaluation in natural resource management. Ejaz's current research is focussed on economics of environmental flows and assessment of reduced water allocations in the Murray-Darling Basin along with a project on urban water supply in the ACT. In one of the projects' he developed an integrated biophysical and economic model and assessed impacts of various water policy options, including water charges, water markets and trade and costs of environmental flows. He also completed a project on regional economic modelling of economy-environment interactions and policy implications using a computable general equilibrium modelling and assessed impacts of increased demand and reduced water supply in the future on sectoral, regional, state and national productivity. In the past, his research focussed on groundwater management, sugarcane profitability, land management, water charges and optimal water allocation in Queensland. He also worked in or led projects investigating hydrologic and economic impacts of water resources and other natural recourses management policy options in Queensland, South Australia, Victoria and New South Wale. He also worked in a project on institutions and policies for improving water allocation and management in the Yellow River Basin of China; supervised a postdoctoral project on water policy institutions in Australia and comparison with India and master dissertation on irrigation salinity management in pakistan. Ejaz was the recipient of 2007 CSIRO Strategic Excellence Look Out Award and 2007 CSIRO Land and Water Chief's High Impact Studies Award.

Selected Publications

Qureshi M, E. Connor, J. Kirby, M and Mainuddin, M. (2007) Economic assessment of environmental flows in the Murray Basin, Australian Journal of Agricultural and Resource Economics 51(3): 283-303.

Qureshi, M.E, Qureshi, S.E., Bajracharya, K. and Kirby, M. (2007), Integrated biophysical and economic modelling framework to assess impacts of alternative groundwater management options, Water Resources Management, DOI 10.1007/s11269-007-9164-1.

Qureshi, M.E., Bajracharya, K., Qureshi, S.E. and Kirby M. (2007) Assessment of alternative groundwater management options in sugarcane growing area in the Burdekin Delta, Australian Journal of Water Resources, 11(2): 207-220.

Mainuddin, M., Kirby, M. and Qureshi, M.E. (2007), Integrated hydrologic-economic modelling for analyzing water acquisition strategies of the Murray River Basin. Agricultural Water Management, 93(1): 123-135.

Qureshi, M.E. (2007) Institutional Reforms in Indian Irrigation by Ashok Gulati, Ruth Meinzen-Dick and K.V. Raju, Published by SAGE Publications, New Delhi, India, 2005, pp. 322, ISBN 0 7619 3311 5(Hb), Rs 595, Book Reviewed, Australian Journal of Agricultural and Resource Economics, 51(2): 216-219.

Qureshi, M.E., Qureshi, S.E. and Wegener, M.K. (2007), Economic implications of alternative mill mud management options in the Australian sugar industry, Agricultural Economics, 36(1): 111-120.

Qureshi, M. E., Qureshi, S.E., Goesch, T. and Hafi, A. (2006) Preliminary Economic Assessment of Groundwater Extraction Rules, Economic Papers 25(1): 41-67.

Kirby, M., Qureshi, M.E., Mainuddin, M. and Dyack, B. (2006) Catchment behavior and countercyclical water trade: An integrated model, Natural Resource Modelling, 19(4): 483-510.

Dr Carolyn Raymond

Visiting Fellow

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Career Brief

Carolyn is a forest geneticist who works with colleagues and students in the ACT and NSW. In addition to her affiliation with the Fenner School, Carolyn is currently Visiting Fellow, Southern Cross University. Previously, 21 years with CSIRO Forestry & Forest Products and 4 years with Forests NSW.

Professional Activities

Pine and eucalypt quantitative genetics and wood quality, resource mapping for wood quality and genotype by environment interactions

Selected Publications

Raymond, C.A. 2007. Influence of wood density and fibre length on properties of medium density fibreboard manufactured from Pinus radiata. Appita Journal 60:204-208.

Raymond, C.A. and Joe, B. 2007. Patterns of basic density variation for Pinus radiata grown in south-west slopes region of NSW, Australia. New Zealand Journal of Forestry Science 37(1):81-95.

Toulmin, M.J. and Raymond, C.A. 2007. Developing a sampling strategy for measuring acoustic velocity in standing radiata pine using the TreeTap time of flight tool. New Zealand Journal of Forestry Science 37(1):96-111.

Poke, F.S., Potts, B.M., Vaillancourt, R.E. and Raymond, C.A. 2006. Genetic parameters for lignin, extractives and decay in Eucalyptus globulus. Annals of Forest Science 63:813-821.

Poke, F.S. and Raymond, C.A. 2006. Predicting extractives, lignin and cellulose contents using near infrared spectroscopy on solid wood in Eucalyptus globulus. Journal of Wood Chemistry and Technology 26:187-199.

Dr David Shorthouse

Visiting Fellow

Biodiversity conservation, environmental planning (ACT and region), threatened species recovery, woodland management,

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Career Brief

Lecturer in Ecology, Canberra College of Advanced Education (1972-1980).; Commonwealth Public Service: ACT Parks and Conservation Service, National Capital Development Commission, National Capital Planning Authority, World Heritage) (1980 -1994).; ACT Public Service: Manager, Wildlife Research and Monitoring, Environment ACT (1994-2007).

PhD (ANU), MSc (University College, London)

Professional Activities

Environment Institute of Australia and New Zealand, Ecological Society of Australia

Dr Michael Smith

Visiting Fellow

T: +61 2 612 57835
E: michaelh.smith@anu.edu.au

Career Brief

Visiting Fellow, ANU Fenner School of Environment and Society and Research Director, The Natural Edge Project.

Michael is co-founder and Research Director for the Natural Edge Project, an award winning Australian sustainability think tank and boundary organization which is hosted by ANU and Griffith University. With his colleagues from The Natural Edge Project, Michael is undertaking a wide range of research projects focusing on how to operationalise sustainable development from an ecological modernisation perspective. Michael has researched and co-authored publications on climate change mitigation and adaptation, sustainable water management, sustainable cities, greening of industry, education for sustainable development, and environmental discourses.

Selected Publications

Smith, M. Hargroves, K (2008) Cents and Sustainability, Securing Our Common Future by Decoupling Economic Growth from Environmental Pressures. Earthscan.London. (In Press)

Stasinopoulos, P. Smith, M. Hargroves, K. and Desha, C. (2008) Whole System Design: An Integrated Approach to Sustainable Engineering. Earthscan Publishing (London) in partnership with UNESCO and the World Federation of Engineering Organisations and the Federal Department of Environment,Water Resources, Heritage and the Arts.

Hargroves, K. and Smith, M.H. (eds and co-authors) (2005) The Natural Advantage of Nations: Business Opportunities, Innovation and Governance in the 21st Century, Earthscan/James and James Publishing, London.

Smith, M., Hargroves, K., Stasinopoulos, P., Stephens, R., Desha, C. and Hargroves, S. (2007) Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation, The Natural Edge Project (TNEP), Australia.

Smith, M., Hargroves, K., Paten, C. and Palousis, N. (2007) Engineering Sustainable Solutions Program: Critical Literacies, The Natural Edge Project, Australia with UNESCO, Engineers Australia and Environmental Engineering College.

Paten, C., Palousis, N., Hargroves, K and Smith, M. (2005) "Engineering Sustainable Solutions Program - Critical Literacies for Engineers Portfolio: Putting Sustainability as a 'Critical Literacy' into Mainstream Engineering Curricula", International Journal of Sustainability in Higher Education. Volume 3

Bekessy, S. Burgman, M. Wright, T. Leal Filho, W. Smith,M (2003) Universities and Sustainability. Tela Paper. Australian Conservation Foundation and Melbourne University.

Dr Mike Smith

Adjunct Professor

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Career Brief

Mike is a Senior Research Fellow at the National Museum of Australia, with interests in the prehistory and human ecology of the Australian desert (including history of ideas about Australian drylands), the timing, nature and impact of early human colonisation of the Australian continent, and the presentation of environmental history in museums.

Editor, reCollections: Journal of the National Museum of Australia.

http://www.nma.gov.au/research/centre_for_historical_research/the_centres_people/dr_mike_smith/

Dr Robin Tennant-Wood

Visiting Fellow

Social and political ecology, waste management, social inclusion in public policy development for sustainability, sustainable urban systems

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E: robin.tennant-wood@anu.edu.au

Career Brief

Coming from a professional background in education as a secondary teacher, and a long-time involvement in politics and environmentalism, Robin joined ANU in 1999 - the year she also won a seat as a Councillor on the Snowy River Shire Council on a platform of issues relating to sustainable local development, including restoring environmental flows to the Snowy River. She was appointed Chair of the South East Waste Board at the end of 1999, a position she held until the end of 2001 and during that same period was a member of the NSW Waste Policy Body. Robin was appointed to the ACT Chief Minister's Sustainability Expert Reference Group in 2002 and currently sits on the ACT Territory and Municipal Services Community Advisory Group, representing science and environmental interests. She has been a Visiting Fellow in the Fenner School since February 2003, during which time she also served a three month period as a Senior Policy Officer in the Department of Agriculture in 2004. Robin lectured in political science and public policy at the University of Canberra in 2005-06, and holds the position of Director of the Canberra Environment and Sustainability Resource Centre, located on ANU campus. She convenes the Independent Research Project unit at Fenner School.

My research work is largely influenced by my practical involvement in policy development at the local level, with a specific focus on waste management and sustainable urban systems. This necessitates a strongly interdisciplinary approach combining the social sciences with ecology in analysing specific aspects of eco-governance. My doctoral research examined the relationship between green politics and the environment movement, and the dynamics that drive paradigmatic change in eco-political thought using the case study of the campaign to save the Snowy River. Having held a seat in local government and chaired a statutory government authority, my working knowledge of environmental issues in the south-east region, and the socio-political and economic influences on the management of these issues, provides an added dimension to my academic work. As Director of an environmental NGO and having had a long involvement with Landcare, I am also a strong advocate of community-based natural resource management. I am currently working on developing links, formal and informal, between ANU and the Environment and Sustainability Centre.

Selected Publications

Tennant-Wood, R. 2007. "Ethics, aesthetics and landscape: A socio-environmental philosophy of windfarm siting", paper presented to the European Science Foundation Exploratory Workshop, ***Emerging Energies***, ***Emerging Landscapes***, ***Revisioning the Past***, ***Constructing the Future***, Paris, June 2007

Tennant-Wood, R. and J. Sullivan, 2006. "Best practice recycling in the tertiary sector", chapter in Leal-Filho and Carpenter (eds), ***Sustainable Practice for International Campuses***, Peter Lang Verlag, Frankfurt

Tennant-Wood, R. 2006. "Silent Partners: the fluid relationship between women and dammed rivers. The case of the Snowy River", chapter in Lahiri-Dutt (ed), ***Fluid bonds***: ***Views on gender and water***, Stree, Calcutta

Tennant-Wood, R. 2004. "The waste land waits on a revolution", ***The Canberra Times***, p.B11, 11 December 2004

Tennant-Wood, R. 2004. "From wasteland to wetland: creating a community ecological resource from waste water in regional New South Wales", ***Local Environment***, Vol.9 No.6, pp.527-539

Dr Chris Tidemann

Visiting Fellow

Wildlife ecology and conservation, conservation through sustainable use, management of feral species, animal welfare, community engagement

T: +61 2 6125 2375
E: chris.tidemann@anu.edu.au

Career Brief

Chris graduated from Adelaide University with a BSc in 1969 and a Diploma of Education in 1970 and from ANU with a PhD in Zoology in 1987. From 1971-1986 Chris was curator of the Zoology Museum at ANU and was on the academic staff of the School from 1987-2005.

Professional Activities

Chris has pursued a lifelong interest in wildlife biology and management in Indonesia, Papua New Guinea and many parts of Australia. His research in these areas has involved collaboration with rural communities; his most recent work has involved assisting communities and local governments to manage wildlife in urban areas. Chris teaches undergraduates and graduates in wildlife monitoring, conservation and management. Chris was a member of the ACT Flora and Fauna Committee from 1999-February 2004 and is a member of three of the World Conservation Union's Specialist Groups: Bats; Sustainable Use of Wildlife; Invasive Species.

Selected Publications

Tidemann, C.R. and Nelson, J.E. 2004. Long-distance movements of the grey-headed flying-fox (Pteropus poliocephalus). Journal of Zoology (London) 263: 1-6.

Tidemann, C. R. 2002. Sustainable management of the Grey-headed Flying-fox, Pteropus poliocephalus. Pp 122-127 In: Managing the Grey-headed Flying-fox as a Threatened Species in New South Wales. P. Eby and D. Lunney (eds). Royal Zoological Society of New South Wales: Mosman.

Tidemann, C. R., Vardon, M.J., Loughland, R.A. and Brocklehurst, P.J. 1999. Dry season camps of flying-foxes (Pteropus spp.) in Kakadu World Heritage Area, north Australia. Journal of Zoology 247, 155-163.

Pell, A.S. and Tidemann, C.R. 1997. The impact of two exotic hollow-nesting birds on two native parrots in savannah and woodland in eastern Australia. Biological Conservation 79: 145-153.

Webb, N.J. and C.R. Tidemann. 1996. Mobility of Australian flying-foxes, Pteropus spp. (Megachiroptera): evidence from genetic variation. Proceedings of the Royal Society of London B 263: 497-502.

Mr David Tongway

Visiting Fellow

Landscape ecology, soil science, restoration ecology, student training

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Career Brief

David Tongway grew up in Bendigo, cental Victoria, obtaining a diploma of Applied Chemistry from the Bendigo Technical College, formerly the Bendigo School of Mines. He spent nearly 3 years as a Patent Examiner, specialising in polymers before taking a position with CSIRO in the Deniliquin Regional Laboratory. He initially ran the analytical services laboratory, but became interested in soil science. A range of CSIRO soil scientists in areas such as micro-morphology, chemistry, physics, pedology, land system mapping and biology mentored David. He put this knowledge to work in devising rapid assessment procedures for soil productive potential in rangelands. He acquired international status in this work and was promoted to Principal Research Scientist in 1994. He won the Chief's prize for Research Influence and Effect in 1997, the ACMER prize for contributions the environmental wing of the Minerals industry and the CSE prize for a lifetime contribution to science in 2003. He retired in 2003 after 38 years with CSIRO, but maintains professional contacts there as well as with Industry.

Professional Activities

David Tongway has presented guest lectures at Universities of Queensland, Western Australia, Murdoch, Canberra, Witwatersrand, Tehran as well as ANU. He was a consultant to the UN Security Council in regard to the ecological damages caused by the invasion of Kuwait by Iraq, and acts as a consultant to the rehabilitation industry.

Selected Publications

Tongway, D J and Hindley, N L.2004. Landscape Function Analysis: procedures for monitoring and assessing landscapes. CSIRO Sustainable Ecosystems,Canberra.

Tongway, David J and Ludwig, John. A. 2002. Australian semi-arid lands and savannas. In Martin R Perrow and Anthony J Davy (Eds) Handbook of Ecological Restoration, Vol. 2 Cambridge University Press, Cambridge

Tongway, David J., Valentin, Christian and Seghieri, Josiane. 2001. Banded Vegetation Patterning in Arid and Semi-arid Environments: Ecological Processes and Consequences for Management. Ecological Studies No. 149, Springer Verlag, New York, 243pp.

Ludwig, J., Tongway, D., Freudenberger, D., Noble, J and Hodgkinson, K. (eds) 1997. Landscape Ecology Function and Management: Principles from Australia's Rangelands, CSIRO, Melbourne.

Tongway, David J., and John A. Ludwig. 1996. Rehabilitation of semiarid landscapes in Australia. I. Restoring productive soil patches. Restoration Ecology 4: 388-97.

Tongway, David J., and John A. Ludwig. 1990. Vegetation and soil patterning in semi-arid mulga lands of Eastern Australia. Australian Journal of Ecology 15: 23-34.

Professor Pat Troy AO

Visiting Fellow

Urban environmental policy and regulation, history of housing policy in Australia

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Career Brief

Professor Troy has worked as an engineer in the private sector and in State and local government, as a planner in NSW and as senior administrator in the Commonwealth. Has conducted reviews of planning and planning education, housing and urban development. Served on State and Federal Government agencies including the South Australian Land Commission. Was Deputy Secretary of the Department of Urban and Regional Development. Consultant to UNESCO on urban development and administration and to OECD on urban development and environmental issues. l966-2000 various positions including professor and head of Urban Research Program, RSSS, ANU. 2000-01 Professor - Centre for Resource and Environmental Studies, ANU. Academic Convenor State of Australian Cities Conferences in 2003 and 2005, patron 2007. Numerous public appointments including: Deputy Chairman, Australian Housing Corporation, 1984-1992 Member, Australian Housing Council, 1995 Member, Board of Inquiry into the Administration of Leasehold in the Australian Capital Territory, 2003-2006 Member ACT Planning and Land Council

Currently Adjunct Professor Urban Research Program, Griffith University, Visiting Professor City Futures Research Centre, Faculty of Built Environment, UNSW

Professional Activities

Australian cities their administration and development, housing, urban environment, infrastructure investment and operation. Current research interests: Urban water policy, the Vulnerability of the City, the construction of energy and water profiles for Australian cities, the suburbanisation of Australian cities, trust and the development and application of environmental regulations

Academic Highlights

Sidney Luker Memorial Medal for contribution to town and country planning. Made Officer in the Order of Australia (AO) for contribution to education and urban and regional development., Elected FASSA, conferred D Arch (honoris causa) (Melb) and DUNIV Griffith.

Selected Publications

Ed. History of European Housing in Australia, CUP

Ed. Equity, Environment, Efficiency, MUP

Ed. Serving the City, Pluto

Perils of Urban Consolidation, Federation Press

Ed. Australian Cities, CUP

Ed. Troubled Waters: Confronting the Water Crisis in Australia's Cities, ANU Epress

Dr Brian J Turner

Visiting Fellow

Native forest management, remote sensing

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Career Brief

Brian's career in forestry started with the NSW Forestry Commission on the North Coast and in Sydney. During that period, he went to Yale University in the USA to gain Master and Doctor of Forestry degrees. In 1969, he started teaching and research at the Pennsylvania State University, and returned to Australia in 1984 to take up the position of Reader in Forest Management at ANU. He retired at the end of 2002 but continues to supervise research students, and conduct research and consultancies.

Professional Activities

My interests range over the broad field of forest management planning, including models for prediction of future production of goods and services from managed native forests to techniques for collecting and analysing GIS and remotely sensed data.

I am currently concluding a RIRDC-funded project to determine the extent and condition of privately-owned dry sclerophyll forests on the tablelands of eastern Australia and develop a decision support system to help owners enhance their value. This year I have helped conduct two workshops on aspects of carbon accounting in forests, one in Canberra for Indonesian foresters and one in Hanoi for foresters from Vietnam, Cambodia and Laos.

Selected Publications

Turner, B. and Matthias, A. 2007. A training manual in forestry planning for Pacific Island foresters. In: [ANZIF]. 2007. The 2007 Institute of Foresters of Australia and New Zealand Institute of Forestry Conference, Programme, Abstracts & Papers, Coffs Harbour, Australia. Pp 387-394.

Turner, B., Huang, Z., Simpson, C. and Hunn, A. 2007. Remotely sensing the dry sclerophyll forests of the Southeastern Highlands. In: [ANZIF]. 2007. The 2007 Institute of Foresters of Australia and New Zealand Institute of Forestry Conference, Programme, Abstracts & Papers, Coffs Harbour, Australia. Pp 395-403.

Mahiny, A.S. and Turner, B.J. 2007. Atmospheric correction for change detection: a comparison of common methods. Photogrammetric Engineering and Remote Sensing 73(4): 361-368.

Huang, Z., Jia, X., Turner, B.J. and Wallis, I,R. 2007. Estimating the nitrogen concentration of eucalypt foliage by automatically extracting tree spectra from HYMAP data. Photogrammetric Engineering and Remote Sensing 73(4): 397-401.

Dr Alan Wade

Visiting Fellow

Water industry and water catchment processes

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Career Brief

Alan Wade's activities at Fenner School and BoZ0 include: Supporting ANU water industry linkages; providing support for PhD students and ANU research staff investigating water supply catchment processes; Research on the impact of fire disturbed landscape on hydrological and water quality processes and on vegetation responses to landscape scale fire; Phytochemistry of herbivore-eucalypt interface.

Professional Activities

Australian Volunteer Abroad; Secretary NHMRC Water Quality Committee; Board member of CRC for Water Quality and Treatment; Principal catchment officer ActewAGL

Studies of impacts of landscape disturbances on hydrological and water quality processes and of the hydrological function of high country fens and bogs. Study of Mugga ironbark impacts on honeybees

Selected Publications

Gill, A.M., Worthy, M., Wade, A., White, I., Mueller, N. (in prep) Fire and water: Framing the fire and fuel management of water supply catchments. Water Down Under 2008, Joint 31st Hydrology and Water Resources Symposium and 4th International Conference on Water Resources and Environment Research, Adelaide Convention Centre, 15-18 April 2008.

Wade, A., Ingwersen, F., Hope, G. (in prep). Flora of the ACT High Country. An illustrated checklist of vascular plants found in the Cotter River, Tidbinbilla and Nass River landscapes, 33 pp.

White, I., Wade, A., Barnes, R., Worthy, M., Mueller, N., Knee R. 2006.. Impacts of the January 2003 wildfires on ACT water supply catchments: Water quality in the Cotter storages and catchment yield. Report to ActewAGL project WF-30039 Iron, manganese, and turbidity post bushfire. Paper presented at Enviro 06, 9 May 2006, 10 pp.

White, I., Wade, A., Worthy, M., Mueller, N., Daniell, T., Wasson, R. 2006.. The vulnerability of water supply catchments to bushfires: Impacts of the January 2003 wildfires on the Australian Capital Territory. Australian Journal of Water Resources 10 (2) 179-193.

White, I., Wade, A., Worthy, M., Gill, A.M., Mueller, N., Newell, B., Wasson, R., M., (in prep). Natural and human Induced fire impacts on water quality in water supply catchments. Water Down Under 2008, Joint 31st Hydrology and Water Resources Symposium and 4th International Conference on Water Resources and Environment Research, Adelaide Convention Centre, 15-18 April 2008.

Professor Patricia Werner

Visiting Fellow

Population and Community Ecology;
Biogeography

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Career Brief

Professor. & department Head Uni Florida, Professor Michigan State Uni, Division Director National Science Foundation USA, Sr. Princ. Res. Sci and Director TERC, CSIRO

Professional Activities

Research on mechanisms responsible for distribution and abundance of terrestrial plant and animal populations. Emphasis on life histories, competition and predation, recruitment and reproduction; interaction of fire, grazing, exotic species, climate change; savannas, prairies and successional habitats. Long term studies in Kakadu National Park. Approach is strongly experimental, field-oriented, with collaborative modelling of future projections for targeted populations.

Selected Publications

Werner PA, Prior LD, Forner J. 2008. Growth and survival of termite-piped *Eucalyptus tetrodonta* and *E. miniata* in northern Australia: Implications for harvest of trees for didgeridoos. Forest Ecology and Management 256: 328–334.

Petty AM, Werner PA, Riley JE, Lehmann CER, Banfai, DS, Elliott LP. 2007. Savanna responses to feral buffalo in Kakadu National Park, Australia. Ecological Monographs 77: 441–463.

Werner, P.A., L. D.. Cowie and J. S. Cusack. 2006. Juvenile savanna tree responses to feral water buffalo: An experimental field study in Kakadu National Park, northern Australia. Australian J. Botany 54: 283-296.

Prior LD, Brook BW, Williams RJ, Werner PA, Bradshaw CJA & Bowman DMJS. 2006. Environmental and allometric drivers of tree growth rates in a north Australian savanna. Forest Ecology and Management 234: 164-180.

Werner PA. 2005. Impact of feral water buffalo and fire on growth and survival of mature savanna trees: An experimental field study in Kakadu National Park, northern Australia. Austral Ecology 30: 625-647.

Ambrose Andrews

Research Assistant

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E: ambrose.andrews@anu.edu.au

Career Brief

Ambrose is a part-time programmer working at the Integrated Catchment Assessment and Management Centre (iCAM) at the Fenner School since 2003, engaged primarily in software development and maintenance with a little server setup and maintenance on the side.

Piers Bairstow

Field Services Manager

T: +61 2 6125 2656
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Career Brief

Piers joined ANU in 1995 as a technical officer in the field services unit.

His main roles are to provide logistical and technical support for undergraduate fieldwork and laboratory based practical classes. Liaison and advice on methodology for project and postgraduate research is also part of his role. Maintenance and purchasing of field equipment, laboratory equipment and vehicle requirements is also included in Piers' duties. Piers is also the first aid officer for field services and the Geography Building.

Simeon Baker-Finch

Research Assistant

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Career Brief

Simeon has worked as a casual research assistant since mid 2005. He has developed user interfaces for various models developed by iCAM at the Fenner School

John Boland

Fenner Information Services

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Career Brief

As a part of the Fenner IT Team, John provides computing support and advice to the students, staff and visitors mainly in the Forestry building. John has been on campus off and on since 1982 and has spent the last 12 years at ANU providing IT services to Fenner School, RSBS and the Law Faculty.

His interests include Programming, Computer Games and Music.

Alexandra Campbell-Wilson

Research Assistant

T: +61 2 6125 6211
E: alexandra.campbell-wilson@anu.edu.au

Career Brief

I graduated from The Australian National University in July 2008 with a Bachelor of Science (Resource and Environmental Management) with Honours. Since the beginning of 2007, I have been working as a research assistant for Dr Jacki Schirmer on various research projects looking at the impacts of land use change from predominately agriculture to more plantation forestry in the Green Triangle (south-west Victoria and south-east South Australia), Tasmania and Western Australia.

Debbie Claridge

Forest ecology & wildlife, Web & Design

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Career Brief

Debbie performs a range of roles within the School, including; Web design development and maintenance; graphic design and in-house publications; support for teaching and research in forest ecology and wildlife.

Debbie has a Bachelor's degree in Applied Science, majoring in Vegetation/ Wildlife Management and Biometry (University of Canberra) and she completed a course in Herpetology (frogs and reptiles) at the Sydney Technical College (NSW). Debbie continues to pursue diverse interests in ecology and diversity of Australian wildlife and of hypogeous fungal species (truffle-like fungi) distribution.

Selected Publications

Trappe, J.M., Claridge, A.W., Claridge, D.L. and Liddle, L. (2008). Desert Truffles of the Australian Outback: Ecology, Ethnomycology, and Taxonomy. Economic Botany, 62(3): 497-506.

Jumponnen, A.M., Claridge, A.W., Trappe, J.M., Lebel, T. and Claridge, D.L. 2004. Ecological relationships among hypogeous fungi and trees: Inferences from associations analysis integrated with habitat modeling. Mycologia 96(3): 510-525.

Claridge, A.W., Trappe, J.M. and Claridge, D.L. 2001. Mycophagy by the swamp wallaby (Wallabia bicolor). Wildlife Research 28, 643-645.

Claridge, A.W., Trappe, J.M., Cork, S.J. and Claridge, D.L. 1999. Mycophagy by small mammals in the coniferous forests of North America: nutritional value of sporocarps of Rhizopogon vinicolor, a common hypogeous fungus. Journal of Comparative Physiology B 169, 172-178.

Susan Cuddy

Projects Manager (iCAM)

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Career Brief

Susan Cuddy is Projects Manager in iCAM. She has a Bachelor of Arts from Queensland University with majors in pure mathematics and German literature, and Graduate Diplomas in Secretarial Studies and Computing Studies from CCAE (now University of Canberra).

Susan has a background in project management, applications programming, GIS and database design. She has many years of experience in developing integrated modelling solutions for catchment land and water resource managers in Australia and near neighbours. Research interests/capabilities are in the meaningful translation of science and research results for managers and community groups via design of appropriate computer interfaces.

Helen Daniel

Assistant Finance Officer

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Career Brief

After completing a BSc in Mathematics and Statistics, Helen worked as an actuarial trainee at Mercer Campbell Cook and Knight. In 1992 she joined the public service where she conducted mathematically based research for the Department of Defence.

Helen currently works as the Finance Assistant.

Mauro Davanzo

Technical Officer
Field Services

Transport, Field Equipment, Technical Support

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Career Brief

Mauro joined the Department of Forestry in August 1991 after working for the Australian Defence Force Academy in supplies and transport. He has over 18 years experience in vehicle management and supply related services.

He has also completed several courses that allow him to teach a number of selected training programs such as, the safe use of 4wds, chain saws and workshop safety. Mauro also maintains a senior first aid certificate.

Ian Davies

Senior Research Officer

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Career Brief

Ian is a software engineer in the field of simulation modelling working under the direction Dr Geoff Cary.

Ian has developed a variety of dynamic simulation models in collaboration with other researchers from Australia, USA, Europe and Africa. These models examine ecological systems from the perspective of populations, communities, landscapes and biomes to address issues of vegetation dynamics, population viability analysis, fire, grazing, seed dispersal, land use and climate change, and carbon cycle dynamics. He is involved in a project to develop a distributed computer-grid platform for modelling multi-scale ecological systems to provide a common framework for representing ecosystem dynamics.

Ian has been involved in many training workshops in SE Asia, Africa and Europe.

Selected Publications

Cary Geoffrey J., Keane Robert E., Gardner Robert H., Lavorel S., Flannigan M.D., Davies Ian D., Li Chao, Lenihan James M., Rupp T. Scott, Mouillot Florent 2006. Comparison of the sensitivity of Landscape-fire-succession models to variation in terrain, fuel pattern, climate and weather. Landscape Ecology 21:121-137

Grigulis Karl , Lavorel Sandra, Davies Ian D., Dossantos Anabelle, Lloret Francisco and Vila Montserrat 2005. Landscape-scale positive feedbacks between fire and expansion of the large tussock grass, Ampelodesmos mauritanica in Catalan shrublands. Global Change Biology 11: 1042-1053

Gignoux J., Davies I.D. and Hill, D.R.C. 2005.. 3Worlds: a new platform for simulating ecological systems. 1st Open International Conference on Modelling and Simulation. Clermont Ferrand, 10-13 June.

Roxburgh, S.H., Barrett, D.J., Berry S.L., Carter J.O, Davies I.D., Gifford R.M.,

Kirschbaum M.U.F., McBeth B.P., Noble I.R., Parton W.G., Raupach M.R. and Roderick M.L. 2004. A critical review of net primary productivity estimates for the Australian continent. Functional Plant Biology 31: 1049-1059

Gignoux, J., Menaut, J.C., Noble, I.R. & Davies, I.D. 1998. A spatial model of savanna function and dynamics: model description and preliminary results. Dynamics of tropical communities (eds. D.M. Newbery, H.H.T. Prins and N.D. Brown), pp. 361-383. Blackwell scientific publications. Cambridge. ISBN:0521839998

Possingham, H.P. and Davies, I. 1995. ALEX: A population viability analysis model for spatially structured populations. Biological Conservation 73 (2): 143-150.

Robert de Ligt

Project Manager

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Career Brief

Rob graduated from SRES in 2005 with a BSc (REM) which included an Honours project investigating patterns in fire probability in the Sydney region. Rob is interested in vegetation, fire and carbon dynamics and how these can be modelled at regional to global scales under a changing environment. Rob worked with Geoff Cary and Karen King on a landscape model incorporating simulation of fire regimes (FIRESCAPE) and carbon pools and fluxes (FullCAM) in the Brindabella/Kosicuszko region. Recently, Rob has been managing a project to improve the LPJ dynamic global vegetation model for Australian dynamics. The LPJ DGVM is a moderate complexity biogeochemistry model, that simulates vegetation dynamics from leaf level photosynthesis to tree allometry and fire effects. Rob is always happy to discuss his work so catch up with him around the Fenner School.

Sonya Duus

Research Assistant

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Career Brief

Sonya completed her SRES undergraduate degree in 2002 and returned to work as a part-time research assistant after travelling and working elsewhere in Australia.

Lorna Fitzsimons

Technical Officer (soil chemistry)

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Career Brief

After 12 years experience in a number of scientific disciplines Lorna joined the Fenner School as a technical officer in 2006. She has a Bachelor of Applied Science and has worked as an analyst for a stock feed manufacturer and a major food processor. She has also worked as a technical officer with CSIRO on projects dealing with soil phosphorus.

She is responsible for coordinating the analysis of soil, water, and plant material for academic staff, and graduate and undergraduate students.

Cathy Gray

Administrative Officer

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Career Brief

Cathy previously worked in administration at the Research School of Chemistry between 1980 and 1996. From 1997 to 2004 she was Executive Assistant to the Executive Director of AARNet (Australia's Academic and Research Network) and joined the administration staff of the Fenner School in 2005.

Mayumi Hay

Student Programs Administrator

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Career Brief

Mayumi comes from Japan and her interest in different cultures and languages brought her to Australia in 1993.

She completed a Bachelor of Arts with Honours, majoring in political science and Asian studies at the Victorian University in Melbourne.

Mayumi has worked at The Australian National University since 1999. Before joining the former School of Resources, Environment and Society as the Student Programs Administrator, she worked in the International Education Office and the College of Business and Economics.

Since settling in Australia, Mayumi has also worked as an interpreter and translator for various organisations including the ACT Government and universities in Australia and Japan.

Clive Hilliker

Information Graphics, Cartography and Design

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Career Brief

Clive has a wide ranging background that includes botany, forestry, ceramics, microbiology, analytical plant chemistry, plant physiology, graphic design, instructional design, web design, and as a Technical Coordinator and manager. Clive eventually found a job that better suited his talents and became a designer and Faculties Cartographer in 1999.

His main field of expertise is the visual communication and interpretation of ideas and information in print media, especially for publication.

Selected Publications

Information Graphics, Illustrations and Maps for:

Bradstock, R., Davies, I., Price, O., Cary, G. 2008, Effects of Climate Change on Bushfire Threats to Biodiversity, Ecosystem Processes and People in the Sydney Region, final report to the New South Wales Department of Environment and Climate Change: Climate Change Impacts and Adaptation Research Project 050831.

Ghassemi, F., White, I. 2007, Inter-Basin Water Transfer: Case Studies from Australia, United States, Canada, China And India, Cambridge University Press, ISBN 0521869692.

Diamond, J. and Bellwood, P. 25 April 2003, Farmers and their Languages: the First Expansions. SCIENCE, pp. 587-603, Vol. 300. ISSN: 1095-9203

Lindenmayer, D., Claridge, A., Hazell, D., Michael, D., Crane, M., MacGregor, C., Cunningham, R. 2003, Wildlife on Farms, CSIRO Publishing, ISBN 0-643-06866-X.

Mackey, B., Lindenmayer, D., Gill, M., McCarthy, M. & Lindesay, J. 2002. Wildlife, Fire and Future Climate: a Forest Ecosystem Analysis, CSIRO Publishing, ISBN: 0643067566.

Campbell, J. 2002. Invisible Invaders: Smallpox and Other Diseases in Aboriginal Australia 1780-1880, Melbourne University Press, ISBN: 0-522-84939-3

Kleinert, S. and Neale, M(Eds). 2001. The Oxford Companion to Aboriginal Art and Culture, Oxford University Press, ISBN: 0195506499

Dr Susanne Holzknecht

Academic Skills Advisor to Graduate Students

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Career Brief

Sue studied Anthropology and Sociology (University of Qld), Linguistics and Teaching English as a Second Language (UPNG). Her PhD is in Linguistics (ANU). For 12 years Sue lectured at the PNG University of Technology, in Language and Communication Studies. From 1993 to 1998, she worked in NCDS, ANU, as lecturer in Academic and Research Skills, EMD Program, then 3 years in the Academic Skills and Learning Centre. In 2001, she began part-time work in SRES as Academic Skills Advisor to graduate students.

In the Fenner School, I assist graduate students to develop skills in academic reading, writing, research, and presentations. I conduct classes focusing on academic skills and workshops on language development, and hold individual consultations with students in relation to their academic work.

My main interest is in discovering new and better ways of motivating students to express themselves more effectively, and take ownership of their own work.

Selected Publications

Bourke, M., Holzknecht, S. and Bartlett, A. (eds). 2002. Weaving a Double Cloth. Stories of Women from the Asia Pacific in Australia, Pandanus Books, Canberra.

Bartlett, A., Holzknecht, S, and Cumming Thom, A., 1999. To Hit the Ground Running. Preparing Students for Graduate Study, Asia Pacific Press, Canberra (Teachers' Manual and Student Workbook).

Diane Jakobasch

Administration Assistant

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Career Brief

Diane has spent the last 7 years working at The Australian National University. Diane deals with Human Resource issues and general office support. She is also the first point of contact at Fenner School reception.

Steve Leahy

Programmer / Multimedia Services
Fenner School Information Services

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Career Brief

Steve is one of those scary computer-literate environmental scientists who would have taken over the world, if their energies hadn't been channelled into other areas such as IT support.

His only interest is improving the IT literacy of Fenner School staff and students (this seems to be working, because over the past year he found some time for other things like improving the Fenner School IT infrastructure, and setting up the Fenner School's on-line lecture system). And making computers do what he expects...

Amongst his interests are ensuring people learn how to use their computers properly; forcing said computers into behaving themselves; making sensible use of multi-media systems; further simplifying the administration of the Fenner School computer servers; occasionally making the acquaintance of a thesaurus; running around the house cleaning up after the toddler; paraphrasing Monty Python where-ever it seems appropriate; boldly splitting infinitives where no-one has split them before; recycling most of his previous yearbook entry; and writing about himself somewhat facetiously in the third-person.

Chris Macgregor

Senior Research Officer

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Career Brief

Chris is a member of the 'Lindenmayer team' of ecologists. He has managed the 'Jervis Bay fire response project' since 2003. The project is monitoring the response of fauna to wildfire and prescribed burning.

Chris has 12 years experience in wildlife survey techniques and project management. Over the last ten years Chris has managed several ecological research projects in the south-east of Australia. He is currently completing post graduate study at ANU, investigating the habitat use and nesting behaviour of Ringtail Possums and Long-nosed Bandicoots at Jervis Bay.

Selected Publications

Lindenmayer, D.B., MacGregor, C., Welsh, A., Donnelly, C., Crane, M., Michael, D., Montague-Drake, R., Cunningham, R.B., Brown, D., Fortescue, M., Dexter, N., Hudson, M. and Gill, A.M. (2008) Contrasting mammal responses to vegetation type and fire. Wildlife Research, 35, 395-408

Lindenmayer, D.B., MacGregor, C., Welsh, A., Donnelly C., Brown, D. (2008) The use of hollows and dreys by the common ringtail possum (Pseudocheirus peregrinus) in different vegetation types. Australian Journal of Zoology, 56, 1-11

Lindenmayer, D.B, Wood, J.T., MacGregor, C., Michael D.R, Cunningham R.B, Crane M., Montague-Drake, R., Brown, D. Muntz, R., Driscoll, D. (2008) How predictable are reptile responses to wildfire? Oikos

Peter Manger

Software Engineer

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E: peter.manger@anu.edu.au

Career Brief

Been in software development professionally since 1995, with a brief break to do BESE(Hons) at UC from 2002 to 2005. Peter joined the Fenner School (iCAM) August 2007.

Peter has worked in various places including the Canberra, Snowy Mountains Hydro, National Archives, DFAT, and the ATO.

Peter enjoys the many challenges of software development, particularly the peculiar vagaries of "what the user actually wants", and trying to get PCs to be actually useful to a persons day to day business.

Lachlan McBurney

Senior Research Officer

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Career Brief

I developed a love of ecology whilst growing up and owner building a mudbrick house with family in the heart of the box ironbark forests of Central Victoria. I studied a Bachelor of Conservation Ecology (Hons) at Deakin University, where I won an Earthwatch Institute Research Fellowship to study with Professor David Lindenmayer and his team at Jervis Bay during my final year.

I have been working with the Fenner School for 5 years, starting off volunteering and now managing all the Victorian Long Term Monitoring Programs and their various trials, experiments and studies.

I have also been assisting other research officers in the team in the N.S.W studies in Jervis Bay, South West Slopes and now the Murray C.M.A Biodiversity Baseline Monitoring Program.

Lea McLean

Finance Officer

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Career Brief

Lea manages the Fenner School finance office. This involves expenses for staff and students, and managing the financial milestones and budgets of the many Fenner School projects.

Lea worked in the private sector before joining ANU in July 2008. She is currently completing a Bachelor of Business (Accounting).

Suzanne Mendes

Executive Officer

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Career Brief

Suzanne has recently joined the Fenner School as its Executive Officer having worked for the past two years at the ANU Research School of Astronomy and Astrophysics, Mt Stromlo. She has undertaken a BAppSc in Information Studies and recently completed an MBA.

Damian R. Michael

Senior Research Officer, Wildlife Ecology

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michaeldamian@hotmail.com

Career Brief

Damian is part of the 'Lindenmayer' research team and has 12 years experience in field ecology specialising in botany and herpetology. He graduated from Charles Sturt University, Albury with a BAppSc (Ecosystem Management and Ecology) and achieved first class honours for research on threatened grassland fauna. He has co-authored two books, is primary author on 12 scientific articles and has co-authored a further 20 scientific publications since 2002. Damian is currently completing a PhD with The Australian National University and is investigating the role of rocky outcrops in the conservation of reptiles in modified landscapes. Damian is the principal project manager for David Lindenmayer's long-term monitoring program in the Murray Riverina and was project manager for the Victorian forest marsupial research. In addition, Damian has had a major involvement in the long-term monitoring at Jervis Bay, Nanagroe and Tumut projects

Selected Publications

Michael, D.R. Lindenmayer, D.B. (2008) Records of the Inland Carpet Python, Morelia spilota metcalfei (Serpentes: Pythonidae), from the South-western Slopes of New South Wales. Proceedings of the Linnean Society of New South Wales.129, 253-261.

Michael, D.R. Cunningham, R.B. and Lindenmayer, D.B. (2008) A forgotten habitat? Granite inselbergs conserve reptile diversity in fragmented agricultural landscapes. Journal of Applied Ecology (in press)

Dr Rebecca Montague-Drake

Senior Research Officer

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Career Brief

After working in environmental consulting for a number of years, Rebecca returned to university to conduct a PhD. Her thesis 'Strategic Management of Artificial Watering Points for Biodiversity Conservation' examined the ecological impacts of artificial watering points. Upon moving to the South West Slopes in 2002, Rebecca became aware of the urgent need to better protect and understand temperate woodlands. Over the past few years, Rebecca has been active in this regard working as a Project Officer (Biodiversity Conservation in the Wheat-Sheep Belt) with DECC and later joining David's team of field ecologists and becoming involved with the South West Slopes Restoration Study and Biodiversity Baseline Monitoring Project and associated extension programs. As part of David Lindenmayer's team, Rebecca also assists with field surveys and associated research activities across several other projects and is currently researching the habitat requirements of declining woodland birds. For more information see:

http://fennerschool-research.anu.edu.au/cle/personnel/rebeccapage.php

Rachel Muntz

Project Administrator

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Career Brief

Rachel provides administrative and research assistance to Professor David Lindenmayer and the Conservation and Landscape Ecology Group within the Fenner School. In earlier life, she studied linguistics and French at ANU, and worked in health economics research at the University of Wales, Bangor, where she also completed her MA in Linguistics. She helped create the BBC Voices project on dialect and multilingualism in the UK (www.bbc.co.uk/voices) and once rode a bicycle from Canada to Mexico.

Selected Publications

Deuchar, M. and Muntz, R. 2003. Factors accounting for code-mixing in an early developing bilingual. In: (*In*)*vulnerable domains in multilingualism*. N. Müller (ed.) pp.161–190. John Benjamins: Amsterdam.

Muntz, R., Hutchings, J., Edwards, R.T., Hounsome, B., Ó'Céilleachair, A. 2004. Economic Evaluation of Treatments for Children with Severe Behavioural Problems. *Journal of Mental Health Policy and Economics* 7(4): 177-189.

Williams, N.H., Edwards, R.T., Linck, P., Muntz, R., Hibbs, R., Wilkinson, C., Russell, I., Russell, D., and Hounsome, B. 2004. Cost-utility analysis of osteopathy in primary care: results from a pragmatic randomized controlled trial. *Family Practice* 21(6): 643-650.

Williams, N.H., Wilkinson, C., Russell, I., Edwards, R.T., Hibbs, R., Linck, P., and Muntz, R. 2003. Randomized osteopathic manipulation study (ROMANS): pragmatic trial for spinal pain in primary care. *Family Practice* 20(6): 662-669.

Muntz, R., Edwards, R.T., Tunnage, B., Prys, C. and Roberts, G.W. 2005. Development of a Welsh language version of the EQ-5D health-related quality of life measure, Stage one: translation. *The Psychologist in Wales* 18:21–25.

Karl Nissen

IT manager

T: +61 2 6125 4613
E: karl.nissen@anu.edu.au

Career Brief

Karl has a Bachelor of Engineering Degree from the University of Auckland. He has worked at The Australian National University since 1996, with a two year absence in Japan. Prior to joining the University he worked at the Australian Centre for Remote Sensing as both a production engineer and project engineer.

After graduating from University he was lucky enough to receive a two year scholarship at the University of Wisconsin Physical Sciences Laboratory, which is a research engineering laboratory. Work done there included the development of a long distance Ethernet bridge, digital frequency synthesiser design and the development of a programmable environmental chamber controller.

At the moment he is the Fenner IT manager and when not managing Fenner IT with the Fenner IT team he likes to spend as much time with his two young children Ashlea and Geordie.

Sarah O'Callaghan

Building Project Officer
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Career Brief

Since completing a BSc(Hons)/LLB in 2002 I have worked at ANU as Technical Services Manager at the Department of Earth and Marine Sciences, and Finance Officer at the Fenner School. Currently I am a building project officer for the Colleges of Science building project, and the Fenner School Building project.

Kavitha Robinson

School Administrator
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Career Brief

Kavitha manages the Administrative team of the Fenner School and provides advice to School leadership on Administration matters. She comes from the ANU College of Law where she was Assistant Manager of the College Outreach and Administrative team. Kavitha is currently completing a Masters of Business Administration, funding for which comes from a Vice-Chancellor staff development Scholarship. She also has a Bachelor of Arts with majors in Mathematics and History, Honours in History and a Graduate Diploma of Education.

Vanessa Sagar

HDR Student Administrator

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Career Brief

Vanessa has recently joined the admin team at the Fenner School as the Higher Degrees by Research Student Administrator. She deals with all HDR program and scholarship administration and brings over 10 years of customer service and admin experience from within the private sector.

David Salt

Knowledge Broker, AEDA CERF hub

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Career Brief

David is a science writer and editor currently serving as a knowledge broker for the Applied Environmental Decision Analysis (AEDA) research hub. AEDA was set up as part of the Commonwealth Environment Facilities program to help inject more science into decision-making processes (connected with things like planning nature reserves, establishing monitoring programs and enhancing revegetation efforts). AEDA includes researchers at ANU (David Lindenmayer's group), the University of Queensland and the University of Melbourne.

Prior to coming to the Fenner School, David established The Helix magazine for CSIRO Education and Newton magazine for Australian Geographic, and produced the award-winning Materials Monthly for the ANU Centre for Science and Engineering of Materials. He has also served as the Communications Manager for CSIRO Wildlife and Ecology.

He now writes and edits the AEDA's monthly magazine Decision Point.

Selected Publications

Walker, B. and Salt, D. 2006. ***Resilience Thinking, Sustaining Ecosystems and People in a Changing World***. Island Press, Washington, D.C., USA.

Cork, S, Delaney, K., and Salt, D. 2005, ***Futures Thinking about Landscapes, Lifestyles and Livelihoods in Australia***, Land and Water Australia, Canberra.

Roughley, A, and Salt, D, 2005 Introduction of Social Sciences in Australian Natural Resource Management Agencies, ***Journal of Research Practice***, Volume 1, Issue 2,

Salt, D., Lindenmayer, D.B., and Hobbs, R.J. 2004. ***Trees and Biodiversity: A Guide for Australian Farm Forestry***. Rural Industries Research and Development Program, Canberra.

Lindenmayer, D.B., Hobbs, R.J., and Salt, D. 2003.. Plantation forests and biodiversity conservation. ***Australian Forestry***, 66, 62-66.

Dr Janet Stein

Senior Research Officer

T: +61 2 6125 4669
E: janet.stein@anu.edu.au

Career Brief

Janet has been undertaking and supporting research in the school since 1988. Her research focuses on methods of spatial analysis to support biodiversity conservation and improved natural resource planning and management. Major projects include the identification of Australia's remaining wild rivers and the development of the national 9-second DEM and nested catchment framework. Janet's PhD thesis, completed in 2006, developed and applied new methods of drainage analysis applicable to the distributary and uncoordinated drainage systems typical of much of Australia. It produced a continental landscape framework, including a new stream and catchment reference system and river environment classification that was used to assess the comprehensiveness and adequacy of the National Reserve System for the conservation of rivers and streams. The work is also now assisting river planning and management programs in several states and the Murray Darling Basin. More recently she was involved in the development of an ecohydrological regionalization of Australia.

Selected Publications

Hutchinson, M. F., McIntyre, S., Hobbs, R. J., Stein, J. L., Garnett, S. and Kinloch, J. (2005) An agro-climatic classification incorporating bioregional boundaries in Australia. Global Ecology and Biogeography, 14, 197-212.

Kingsford, R. T., Dunn, H., Love, D., Nevill, J., Stein, J. L. and Tait, J. T. (2005) Protecting Australia's rivers, wetlands and estuaries of high conservation value. Department of Environment and Heritage Australia, Canberra http://www.environment.gov.au/water/publications/environmental/protecting-rivers.html

Klein, C., Wilson, K., Watts, M., Stein, J., Berry, S., Carwardine, J., Smith, M. S., Mackey, B. and Possingham, H. (in press) Incorporating ecological and evolutionary processes into large-scale conservation planning. Ecological Applications.

Stein, J. L., Stein, J. A. and Nix, H. A. (2001a) Wild Rivers in Australia. International Journal of Wilderness, 7, 20-24.

Stein, J. L., Stein, J. A. and Nix, H. A. (2002) Spatial analysis of anthropogenic river disturbance at regional and continental scales: identifying the wild rivers of Australia. Landscape and Urban Planning, 60, 1-25

John Stein

Research Officer

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Career Brief

A forestry graduate from ANU, John returned in 1987 after modelling crop growth and climatic suitability of tree species at CSIRO. His work focuses on the development of methods for spatial analysis of environmental data, with application to his primary field of interest, biodiversity conservation. Interpolation of elevation has been central because of its fundamental importance in developing abiotic data sets of terrain, climatic and surface drainage parameters. These have then been used to create frameworks for assessing biotic data and their interactions with land cover and anthropogenic disturbance. Applications have included bioclimatic profiling of species to predict their distributions, derivation of flow paths to calculate indicators of river disturbance, and classification of catchments as environmental domains.

Selected Publications

Stein, JL, Stein, JA & Nix, HA, (2002) Spatial analysis of anthropogenic river disturbance at regional and continental scales: identifying the wild rivers of Australia, Landscape and Urban Planning, 60:1-25

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Jenny Stott

Research Officer

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Career Brief

I graduated from the University of Sydney in 2004, completing a Bachelor of Science, majoring in Biology.

In 2005, I was lucky to be employed by Arid Recovery, Roxby Downs, South Australia. Arid Recovery is an ecosystem restoration initiative dedicated to the restoration of Australia's arid lands. As the Ecologist, I worked with magnificent animals and many amazing people.

In March 2007, I joined Dr Joern Fischer on the new research project "Sustainable Farms" investigating regional-scale patterns in tree regeneration under different grazing management practises.

This is a new area that I am moving into and am looking forward to new challenges this project will present. I feel that in order for Australia's fragile ecosystems to survive, we have to try to modify our practises to make a sustainable future, otherwise we are going to lose many more of the unique flora and fauna that make Australia such an amazing place. I hope with projects like this one I can contribute to facilitating some of those changes.

Dianne Wallace

Executive Assistant to the Director

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Career Brief

Dianne has no degrees but a wealth of experience working in different offices in Australia, London, Los Angeles and New York where she worked for Austrade and then an international shipping group. Her last job in Sydney before leaving for the Coffs Coast was at the Australian Dental Research Foundation where she administered their secretariat and research grants. A sea change in Coffs yielded no gratification so Dianne returned to the city, this time Canberra, in October 2006.

Shorthand is her natural medium and she has minuted many public meetings, including one in Canberra for the ACT Department of Health. As a deviation from secretarial work some years ago she went into the hotel business and then a retail food shop in Sydney but soon realised that an office and those who inhabit it are her preferred surrounds and she is back where she belongs.

Dr Tingbao Xu

Senior Modeller

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Career Brief

I have been actively engaged in research/development in spatio-temporal modelling, bioclimatic modelling and relevant fields since the early 1980s. I have extensive experience in modelling and mapping climatic and natural resource data. Particular strengths in computing, GIS and remote sensing.

July 2005 - present: Senior Modeller, The Fenner School of Environment & Society, ANU. Actively contributing to projects of the school in modelling and mapping surface climate and topography and a wide range of environmental applications. Providing central support to two of the school's main themes – global change and Landscapes, water and biodiversity.

Research Scientist 1999–2005. and Manager for spatial data modelling 2001-2005., AGRECON, University of Canberra.

Senior GIS officer 1998–1999., ERIN, Department of Environment and Heritage of Australia.

PhD Student 1994–1997. and Research Officer 1995–1997., CRES, ANU.

Visiting Fellow 1992–1993., CRES, ANU.

Assistant Professor 1985–1991., Institute of Remote Sensing and GIS, Beijing University.

Selected Publications

Hutchinson, M.F., Nix, H.A. and Xu, T. 2006. Review of bioclimatic modelling to assess climate change impacts on biodiversity. Report to the Australian Greenhouse Office. Centre for Resource and Environmental Studies, Australian National University.

Hutchinson, M., Gessler, P., XU, T. and Gallant, J., 1995. Filtering Wagga TOPSAR Data to Improve Drainage Accuracy. Proceedings First Workshop on Australian AIRSAR/TOPSAR Data, University of NSW, Sydney, Australia, October, 1995.

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Ani Adiwinata Nawir

PhD Scholar

Strategies to enhance the implementation of small-scale commercial tree growing in Indonesia

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Research Description

Indonesia is continuing to experience large-scale forest loss and degradation. Some 21.7 million ha of 127 million ha of natural forest were lost in the decade to 2000; and timber production has decreased significantly.

Small-scale commercial tree growing can potentially fill some of the gap in national wood supply, and contribute to enhancing local livelihoods. There are currently three major schemes: farm forestry (Hutan Rakyat), community forestry (Hutan Kemasyarakatan), and community-company partnership (Kemitraan).

This research seeks to inform policies to enhance the implementation of commercial tree growing, by exploring issues associated with the three current schemes. Research questions are:

What are the advantages and disadvantages of the three current schemes in terms of management, socioeconomics, and policy framework?

What are the benefits and costs (in both social & economic terms) of the three existing schemes in comparison to other investment options using the same lands?

What does this analysis suggest are the relative advantages of small-scale commercial tree growing in the wood production strategies?

How does this information and analysis inform the design and implementation of policies to promote small-scale commercial tree growing?

The research methods comprise descriptive qualitative and Cost Benefit Analysis (CBA) based on empirical data. Scenario models will be developed using the results of the economic analysis, to assess the impacts of policy options.

Imran Habib Ahmad

PhD Scholar

Integrating Climate Change Policy and Sustainable Development: structures and processes for national implementation

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Research Description

This research examines the relationship between climate change policy and (sustainable) development at two levels:

(i) the implementation of climate change and development policy at national scale, in accordance with the countries national priorities and the linkage with the parameters of the international policy regime, and within the national policy system in terms of the relationship between and incorporation of climate policy in other policy sectors.

(ii) the international policy regimes, in terms of incorporation/encouraging of mainstreaming mechanisms and guidance at the country-level

The overarching goals of this research are to develop a better understanding of the barriers to and potential policy and institutional mechanisms for mainstreaming climate policy across other policy sectors towards the goal of sustainable development.

Carmel Anderson

Master of Philosophy Scholar

Social networks and the community consultation process

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Research Description

As governments perceive and act on a need to address climate change, large tranches of rural land are being identified and leased for industry greenhouse gas mitigation projects. Windfarms in Gippsland and western Victoria, a solar farm planned for north-west Victoria, and geosequestration, or carbon capture and storage, projects planned for south-west Victoria, Gippsland in eastern Victoria and SE Queensland will span vast tracts of land involving consultation between multiple local governments and associated communities.

Such projects will require sustained and genuine community consultation and engagement processes.

This research aims to investigate how communities learn about these projects and consider their implications during the consultation phase by looking at the impact social networks have on the consultation process. The thesis research question, "How do social networks form and function in and around a formal consultation process?", does not focus on the merit of the projects nor on the consultation processes, but aims to provide a framework for the analysis of social networks during the consultation process and improve capacities to engage with the community about greenhouse landuse change projects.

Kerry Arabena

PhD Scholar

The Universal Citizen: An Indigenous and Ecological Citizenship Framework

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Research Description

Ecological philosophers highlight the fact that the achievements in science, technology, industry, commerce and finance have brought humans into a new age at the expense of much of the diversity of life and the life enhancing processes of the Earth. Across the world, life is being lost, driven to extinction by the essentially unchecked ideal and practice of development, itself underwritten by forms of cultural imperialism, patriarchal relations and the suppression of Indigenous world views.

The urgency is to curb the lack of discipline inherent in our utilisation of our Earth's resources by moving from 'human centric' to 'earth caring' approaches in the future. Ecologists and Indigenous peoples across the world have shown themselves capable of disengagement from processes that exalt human beings as distinct from, not intrinsic too, the Universe in which we live. As such it is Indigenous peoples, with ecologists and ethicists who are in a prime position to assist the human community realise our dependency on nature and structure new citizenship models, to refocus our efforts on our, and the Earth's future.

This project involves synthesising Indigenous and ecological knowledges to develop universe referent models of citizenship, determine what might be achieved by them, and how these models might be accomplished.

This project is an opportunity to conceive knowledge for the future outside of the constructs of a Western modernity by placing the universe as the 'primary' in our lives and seeing what emerges.

Glen Bann

PhD Scholar

Dryland salinity, biodiversity and geodiversity in box/gum grassy woodlands of south-eastern Australia: Quantification using biotic and abiotic indicators – with applications for NRM.

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Research Description

Dryland salinity and the loss of endemic species are paramount concerns, yet there is surprisingly little research investigating the interaction of these two phenomena, particularly regarding terrestrial species. That which has been performed contains many (invalid) assumptions.

My research will investigate the interaction between dryland salinity, regolith and terrestrial biodiversity in yellow box & red gum grassy woodlands (Endangered Ecological Community). As the problem is multifaceted and complex, a holistic, multidisciplinary approach is used to identify important processes within the system. Survey methods including both biotic and abiotic indicators will be used to identify relationships. These include vertebrate, invertebrate and flora surveys, soil and plant analyses, 'Landscape Function Analysis', 'Habitat Hectares', piezometers and the use of EM38 and EM31 instruments. Results will be useful for targeting priority areas for mitigation, remediation and remnant retention activities, using endemic perennial vegetation and farm forestry initiatives.

Results to date indicate that in most upland landscapes, dryland salinity;

1) is very localised and not expanding at a dramatic rate as currently promoted,

2) is predominantly caused by (surface) soil degradation processes subsequent to stock over-grazing, clearing and conventional cropping practices (i.e. it is a top down process rather than bottom up process as currently promoted),

3) does not necessarily adversely affect terrestrial biodiversity in these woodlands (as currently promoted) as endemic fauna and flora species are relatively salt-tolerant (as can be expected – southern Australia is very salty, and natural).

4) can be mitigated and remediated with native species after appropriate soil works, treatment and stock management

Philip Barton

PhD Scholar

Insect biodiversity and woodland restoration

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Research Description

The conservation of insect biodiversity is important for maintaining ecosystem health and function. This PhD project is focusing on beetle biodiversity as part of the ANU-ACT Government Mulligans Flat-Goorooyarroo Woodland Experiment, with collaboration from CSIRO Entomology. The primary aim of my project is to investigate patterns of beetle biodiversity in box-gum grassy woodland and to examine how beetles respond to experimental addition of dead wood and reduced kangaroo grazing pressure. A secondary aim is to examine the functional traits and morphology of beetles and linking these to underlying ecosystem processes and factors influencing beetle assemblage composition. Understanding how these experiments impact on beetle biodiversity will further our knowledge of insect conservation and contribute to woodland restoration and management projects.

Jie-Lian Beh

PhD Scholar

Improving fine scale soil classification to support forest operational management

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Research Description

Knowledge of the spatial variation in soil properties is fundamental for the effective implementation of precision forestry. The scale required for precision forestry is fine (high resolution) and requires the ability to detect trends over a matter of metres rather than several hundred metres. Various approaches to model trends at this scale from process models have had only partial success.

In forest plantations, there is some standardisation in tree genetics, planting and establishment procedure and at a local scale, relative homogeneity of climate. The important variation in any site could thus be attributed to variation in soil properties (including depth, carbon content, water holding capacity etc.). It is hypothesised that variation in soil characteristics is reflected in some variation in the tree growing at that point. As a tree may be "exploring" the soil within a few metres of its main trunk, individual tree characteristics may therefore be effective predictors of soil characteristics at the appropriate scale.

The results of this research may have several potential applications including: enabling precision forestry even if soil properties are unknown, allowing tree shape to be predicted given soil properties are known, improving soil carbon assessment and improving water quality and erosion potential modelling.

Victoria Bennett

PhD Scholar

Reintroduction of the Brown Treecreeper

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Research Description

Reintroduction is the deliberate movement of plants or animals in an attempt to establish a species in an area within its historical range, from which it has recently disappeared. The reintroduction of animal populations is an important and increasingly popular conservation tool, yet the approach and underlying theory have rarely been tested in Australia. Reintroductions aim to address accelerating biodiversity loss in the face of species extinctions, thereby successfully establishing self-sustaining populations.

This project will provide the first experimental reintroductions of the Brown Treecreeper, Climacteris picumnus. This species will be reintroduced to Mulligans Flat and Goorooyarroo Nature Reserves in the Australian Capital Territory, where large-scale habitat restoration experiments are ongoing. By performing this reintroduction in a rigorous experimental context with a detailed monitoring and evaluation plan, we will gain vital information and provide invaluable models and protocols to guide other reintroductions in many Australian environments.

This project will also examine the possibility of reintroduction of small mammals, such as the New Holland Mouse, Pseudomys novaehollandiae, into Mulligans Flat after the construction of a predator-proof fence. Field and laboratory-based diet analysis will determine whether Mulligans Flat will provide suitable habitat for this species.

Falguni Biswas

PhD Scholar

Surface-Groundwater Interactions in the Upper Hunter River under Changing Climate

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Research Description

Increases in stream water salinity are a common occurrence in catchments where variable and drying climate have the potential to change the salinity dynamics. Considering current climate change, this study investigates reasons for salinity of Wybong Catchment in Hunter Valley of New South Wales. Investigations include source of salinity, water and salt balance, and groundwater dynamics. The study particularly highlights discharge of saline groundwater and the effect of mineral weathering which are both considered to increase stream salinities in this catchment. Further investigation of water (quality and quantity) management in the Wybong catchment, the prediction of groundwater levels and streamflow in catchments is also determined.

Suzi Bond

PhD scholar

Bird utilisation of revegetation and woodland remnants in an agricultural landscape in south-eastern Australia

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Research Description

Since European settlement, there has been widespread clearing of temperate eucalypt woodlands in south-eastern Australia, mainly for agriculture. This clearing has led to large areas of woodlands being destroyed, while any remaining woodland is often degraded and fragmented, and subject to continuing pressures. In turn, many birds that rely on woodlands have declined. Research on birds in revegetation in an agricultural context in Australia is limited, and there is an important need to better determine how birds are faring in revegetation, particularly so for woodland and declining birds, and also for breeding success in revegetation. This is where my project fits in, as I intend to determine the extent to which birds are able to utilise revegetation and remnants in an agricultural context, with a focus on breeding success for the first field season. The study area is between Wagga Wagga, Gundagai and Albury in south-eastern New South Wales. If we know how different birds respond to revegetation, then we can translate that knowledge into future revegetation design and management, which could help halt woodland bird declines.

Lara Boyd

PhD Scholar

Measuring Native Vegetation Quality in North West Victoria

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Research Description

The importance of protecting and conserving biodiversity is reflected in legislation and policy at all levels of government. Implementing strategies to achieve biodiversity conservation requires effective, accurate and reliable tools, in particular a vegetation condition assessment tool. Such tools are being developed for identifying conservation priorities, monitoring rehabilitation programs, assessing development applications, managing conservation incentive programs, educating landholders, and state-of-the-environment reporting. In Victoria, government agencies currently use the Habitat Hectares method to evaluate vegetation condition, however the efficacy of this method for all vegetation types has not yet been established. The aim of this project was to refine an assessment tool for the Mallee-type vegetation of North West Victoria. Vegetation condition was determined using a range of assessment tools and basic ecological survey techniques at 32 sites across North West Victoria. Comparison of the data collected by different methods suggests that while the Habitat Hectares method was useful in indicating vegetation condition, other methods were more accurate. Based on these analyses, this project will construct a new method for measuring vegetation condition in the Mallee.

Greg Buckman

Master of Philosophy Scholar
Renewable Energy Electricity Policy

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Research Description

Climate change is the greatest environmental threat the world faces. Reducing carbon emissions from electricity generation is one of the most feasible ways of reducing global greenhouse emissions. One of the best ways of reducing electricity generation emissions is to increase the generation of electricity from renewable energy sources.

My studies focus on what type and design of support mechanism can best help stimulate the uptake of renewable energy electricity and what ramifications this has for Australia.

The most popular mechanisms for stimulating renewable energy electricity are emissions trading, feed-in tariffs, and renewable portfolio standards like Australia's Mandatory Renewable Energy Target (MRET) mechanism. All three have advantages and disadvantages and need to be augmented with complementary policies that address transmission access, research and development and capital costs. The basic mechanics of the mechanisms are well known. Major questions remain about how they can be finessed to ensure that a broad range of renewable energy electricity types is stimulated at least cost, and how they can best interact with other policies. My research effort will attempt to answer these questions.

Principal supervisor: Jack Pezzey (http://people.anu.edu.au/jack.pezzey/)

David Bush

Master of Philosophy Scholar

An investigation of genotype-by-environment interaction in southern Australian trials of *Eucalyptus cladocalyx* and implications for breeding

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Research Description

The research is examining the magnitude and nature of Genotype-by-environment interaction (GEI) in *Eucalyptus cladocalyx* (sugar gum), a species that has potential for broad scale planting in Australia's low rainfall sheep-wheat belt. GEI is a term used to describe differential performance of genetic material in a range of different environments. It is well-established that the performance ranking of varieties or other genetic groupings of agricultural and forest crops can change when they are compared in a range of varying environments. In some instances such changes in ranking are of little practical significance, whereas in others genetic improvement programs should be tailored to adjust for the differential performance – regionalisation of tree breeding programs for example.

The study is focused on a breeding population belonging to the ALRTIG (Australian Low Rainfall Tree Improvement Group) comprised of 140 families of *E. cladocalyx* situated across eight sites in southern Australia. GEI for the dataset is being identified using methods traditionally used in forestry as well as emerging methods that have thus far been applied in the analysis of GEI in agricultural crops. The study will have implications for the future management and structuring of ALRTIG's *E. cladocalyx* breeding population.

Kylie Carman-Brown

PhD Scholar

Seeing Through Water: Holism and Environmental History in the Gippsland Lakes Catchment, Victoria, Australia from 1838-1900

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Research Description

My research examines both the physical and cultural aspects of the hydrological cycle in nineteenth and early twentieth century Gippsland.

Using a simplified version of the cycle appropriate to the era, the bulk of the thesis will detail settler knowledge of and responses to water in its different states and qualities, water as precipitation, flowing water, still water and evaporating. Unlike most historical research which generally focuses upon only one element of the cycle, I seek to present a more holistic view. In doing so, this thesis will examine the European settlement process in Gippsland with a particular emphasis on its impact on the health and integrity of the region's abundant wetlands.

My particular theme is connection. I am interested in tracing what connections early Gippslanders made (or didn't make) between the passage of water through the landscape and through their lives. In this, I am as much interested in the material (building bridges and draining swamps) and the metaphorical (the practice of baptism and descriptions of water).

Leonardo Carroll

PhD Scholar

Water and Catchment Planning: Incorporating Demography and Population

E: leonardo.carroll@anu.edu.au

Research Description

This project investigates how demographic and population issues can be incorporated into water resource planning, in selected areas of New South Wales and Queensland. The project will:

assess the institutional framework for, and interactions between, key stakeholders including natural resource managers, land use planners, and research organisations;

seek to understand and document existing and potential methods for use of demographic data, by natural resource managers and land use planners; and

identify mechanisms through which natural resource managers and land use planners can most effectively use demographic data and factor population change into their planning processes.

Serena Chen

PhD Scholar

Fish Communities in the Murray-Darling Basin: Developing Predictive Models for Improved Science and Decision Making

E: serena.chen@anu.edu.au

Research Description

Bayesian networks are increasingly being used in ecological modelling as they are able to integrate different sources of evidence and different system processes, represent uncertainties in knowledge and inherently variable environments, and explicitly link ecological outcomes with management activities and system changes. This PhD project will involve the development of a Bayesian network model for predicting the ecological condition of river systems in selected Victorian catchments in the Murray-Darling Basin (MDB), using native fish communities as an indicator. Fish communities are considered a good indicator of the ecological condition of river systems due to their sensitivity to catchment disturbances and their ability to integrate several stream processes over a wide range of spatial and temporal scales. The outcome of the project will be a decision support tool that will guide users in making better decisions about the management of the river systems, as well as examine changes in fish communities in response to system changes (such as alternative environmental flow and climate scenarios), and alternative catchment management activities (such as rehabilitation of riparian zones). The model can also be used to identify key knowledge gaps, target monitoring and prioritise investments in catchment management.

Stuart Cooke

PhD Scholar
Ecological Humanities
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Research Description

The German philosopher Martin Heidegger said that man (and, presumably, woman) dwells poetically. I am interested in asking how it is that poetry seems to open up places to us and, as a consequence of this opening, make them important. Many Aboriginal songpoems have the power to regenerate the surrounding country, and to restore the connections between people and the places they inhabit. Such poetry is a powerful method of maintaining sustainable environmental practices and, more importantly, of promoting a deep intimacy and respect for the non-human features of the terrain. Famous Western poets, such as Judith Wright and Pablo Neruda, have also used poetry as a means of giving voice to the natural world. What can we learn about dwelling poetically from these different kinds of poetry? What is it about poetic language that gives form to a world often neglected by more analytical kinds of writing and speaking? In a time of such rapid environmental change, we need to be thinking about ways in which we can evoke the living, breathing world around us so that more people will feel a stronger sense of responsibility for it.

Katherine Daniell

PhD Cotutelle Scholar

Co-engineering participatory modelling processes for water planning and management

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Research Description

Broad-scale multi-stakeholder decision-aiding processes for complex water planning and management issues are typically organised or "co-engineered" by several agencies or actors. These participatory processes are therefore co-initiated, co-designed and co-implemented by a number of people. Co-engineering has received scant attention in studies of participatory decision-making and remains an important gap in current knowledge. The method of intervention research was used to investigate the co-engineering of two participatory modelling processes: the creation of the "Lower Hawkesbury Estuary Management Plan", a regional risk management planning project on the northern edge of Sydney in Australia; and the "Living with Floods and Droughts" capacity building project for co-managing flood and drought risks in the Sofia region of Bulgaria. From these research interventions and their comparative evaluations, a number of important innovations and insights have been identified, including that multiple and divergent objectives within co-engineering project teams can lead to conflicts which can have major impacts on the implemented participatory modelling processes. There are therefore two processes to organise to aid multi-stakeholder decision-making: the co-engineering process and the participatory water management process. The cotutelle PhD is principally funded by the General Sir John Monash Foundation and further supported by the ANU/CSIRO (Australia) and Cemagref/AgroParisTech (France).

Peter Dostine

PhD Scholar

Ecology and management of the Flock Bronzewing Phaps histrionica

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Research Description

The Flock Bronzewing is a characteristic bird of the open black-soil (cattle production) plains of northern Australia. This species has suffered a substantial reduction in range and is now absent from large areas that were formerly occupied. However, it remains patchily and periodically common on the Barkly Tableland in the Northern Territory and parts of the Channel Country in south-west Queensland. Currently, the level of ecological understanding of this species is not sufficient to prescribe adequate conservation measures. Key data on resource use, movement patterns and interactions with the dominant land use on the black-soil plains are lacking. This project will redress this deficiency and provide data on distribution, diet, habitat requirements, and movement patterns in relation to variation in resource availability. The key component will be description of movement patterns at local- and broad-scales. Studies of local-scale movement will identify how they use landscapes currently dominated by the pastoral industry: studying the nature and extent of broad-scale movement will identify the sequence of habitats and resources that are required throughout the seasonal cycle, and the nature of linkages within the broad landscape that are required for maintenance of populations of this species.

Jess Drake

PhD Student

Key Ameliorants for Nutrient Cycling Restoration: Soil Biota, Organic Matter and Vegetation. Case Study: Cowal Gold Mine, West Wyalong, NSW

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Research Description

In highly altered landscape rehabilitation, it is critical to restore the three aspects of an ecosystem: Function, Structure and Composition. At early stages, the key elements of restoration are related to the ecosystems function. Function includes nutrient cycling, water holding capacity, capture and storage of resources and soil structural stability. Nutrient cycling is a key element of any ecosystem. It involves the breakdown of complex organic compounds into bio-available nutrients, which can then be used for the establishment, growth and maintenance of vegetation. By recreating nutrient cycling, we are increasing the function of an ecosystem. This leads to successful revegetation and the development of a self-sustaining ecosystem.

Three key factors related to nutrient cycling include soil biota, vegetation and organic matter. All three of these three elements are destroyed by mining operations, causing altered nutrient cycling. There is a scarcity of research describing how to combine all three factors for the restoration of nutrient cycling. The project will determine what applications are necessary for restoring nutrient cycling in highly altered landscapes. Nutrient cycling will also be used as an indicator for the trajectory of change towards a self-sustaining and resilient ecosystem.

John Drewry

PhD Scholar

Modelling water quality in Eurobodalla catchments

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Research Description

Catchment-scale water quality models are useful to evaluate diffuse pollutant sources and prioritise investment. The research is focused on the Tuross River and the Moruya-Deua River catchments of coastal NSW. The research identifies pollutant sources and improves modelling simulation in the CatchMODS model for improved catchment management. Development of nutrient risk index-based modelling at the large catchment scale is also included. Supervisors are Lachlan Newham, Richard Greene, Barry Croke and Tony Jakeman. I have also researched soil properties and farm nutrient practices in New Zealand, and water quality improvement in the Mackay region.

Recent Publications

Drewry, J. J.; Newham, L. T. H.; Greene, R. S. B.; Jakeman, A. J.; Croke, B. F.W. 2006. A review of nitrogen and phosphorus export to waterways: context for catchment modelling. Marine and Freshwater Research 57: 757–774.

Drewry, J. J.; Newham, L. T. H.; Greene, R. S. B. 2007. An index-based modelling approach to evaluate nutrient loss risk at catchment-scales. MODSIM 2007. Pp 2326–2332.

David Eastburn

PhD Scholar

Realising rural community capacity to sustain strategic local landscapes on behalf of Australian Society

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Research Description

The basis of my research is the assumption that members of rural bioregional communities have a rich base for interpreting the past, are highly sensitive to current climatic, environmental, market and policy changes, and have a strong interest in a sustainable future for the landscapes in which they live and work. They should, therefore, have greater involvement in decision-making and management processes that relate to the sustainability of their 'places' so that they can respond with local knowledge, imagination and passion, rather than being forced to react to distant decisions or inappropriate prescriptions.

The research will examine the 'politics' of sustaining local landscapes including the 'local trap', and the values that different groups within society ascribe to different landscapes at different times (with special reference to wetlands). In particular, it will investigate current and historical policies relating to river regulation which impact/ed on the sustainability of landscapes. The research will identify attributes that rural communities, and natural resources management institutions, may benefit from in order to effectively contribute to ecologically and socio-culturally sustainable future landscapes. It will also explore the roles of community, intergenerational equity, and communication in sustaining landscapes.

Rory Eames

PhD Scholar

Is Working Together Enough? Participation, Collaboration, and Governance: Community Roles in Regional Natural Resource Management. The Case of the Swan Region, Western Australia

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Research Description

'Community', 'stakeholder' and 'public participation' are often referred to as key aspects of integrated and collaborative frameworks used to address complex environmental degradation issues, especially at the catchment and regional scale. In Australia, Integrated Catchment Management and to some extent Landcare have predominantly provided the avenues for this to happen, and the case study of the Swan-Canning catchment in South West Western Australia is typical of this approach. However a combination of factors surrounding this case study suggests that the conceptualisations of the role of community in environmental management are increasingly inadequate. An understanding of these factors, combined with a synthesis of theories from a range of literature suggests a fruitful way to (re)conceptualise the role of community in collaborative environmental management at the catchment and regional scales.

Saan Ecker

PhD Scholar

Assessing socio-economic and cultural drivers advancing and impeding environmental certification in the Blackwood Basin, SW Australia

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Research Description

Australia is at an early stage in developing accredited Environmental Management Systems (EMS) and even earlier in developing certification processes for agricultural products. The principle objective of this study is to determine the role of attitudes, values and beliefs in driving environmental certification systems for agricultural products in Australia, focusing on the Blackwood Basin in the South West of WA. The study runs in tandem with an environmental certification process – "BestFarms" - in that catchment.

The study focuses on attitudinal influences on products, from production to consumption, considering attitudinal influences that occur throughout the cycle. The study explores five of the Blackwood Basin's major agricultural products - grains, milk, wool, wine and fruit using a conventional and a certified example for each product type. Assessment of the product's environmental 'career' will be developed through informal interviews with best practice case study farmers and other actors in the supply chain, including processors, distributors and consumers. An abbreviated life cycle assessment will also be undertaken to estimate each product's ecological footprint.

Potentially, this knowledge can be used by organisations promoting environmental certification to target and develop systems that recognise the role of attitudes, values and beliefs, thereby positively influencing rates of adoption.

Carole Elliott

PhD Scholar

Landscape ecology and genetics of the Emu Bush (*Eremophila glabra* subsp. *glabra* (R. Br) Ostenf.).

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Research Description

Developing dual purpose land management strategies that conserve ecological function and maintain native biodiversity while providing adequate agricultural production, is the challenge for the 21st century. This will require a scientifically based knowledge of the ecological processes that determine population viability in agricultural landscapes. In central NSW clearing for wheat production has generated landscapes consisting of narrow (<20m) linear strips of native vegetation with only occasional larger remnant vegetation patches. This study focuses on a plant species common in this landscape. Eremophila glabra subsp. glabra is a bird pollinated, widespread understory shrub. We use it as a case study for investigating ecological and genetic functions of a plant in such a fragmented landscape. The study consists of comparative analysis of the reproductive and genetic performance of replicates of five landscape elements ranging from interior patch populations to isolated linear strip populations. This includes measurement of flower production; pollinator community composition; pollinator behaviour; stigmatic pollen load; fertilisation; fruit and seed set; genetic diversity; level of inbreeding and fitness of progeny. Results so far imply that isolation from remnant patches might reduce the fecundity of Eremophila glabra subsp. glabra populations.

Susan Emmett

PhD Scholar

The effects of soil properties and management disturbance on native earthworms in wet eucalypt forest ecosystems

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Research Description

Forest management practices such as clearcutting, burning and soil disturbance greatly impact on soil quality and soil fertility by the alteration of organic matter inputs, by changes to the soil physical structure and by changing the soil biological and chemical composition. Prescribed burning, thinning and clearcutting remove the forest understorey and energy rich forest floor and impact on soil biological communities, such as earthworms that are dependent on this food source.

This ARC funded project investigates the relationships between vegetation, soil properties (chemical, physical and biological) and native earthworms in several tall eucalypt sites in south-eastern Australia. In addition, the effects of disturbance from forest management operations on native earthworms are being examined. Preliminary findings from the Eucalyptus regnans site suggest that at ten years post-harvest, the probability of native earthworm occurrence is strongly related to soil organic carbon (SOC) content. Such a finding suggests that the proposed Montreal soil indicator, changes in SOC, is representative of important soil biological properties.

Baihua Fu

PhD Scholar

An Integrated Catchment-Scale Approach to Identifying Suspended Sediment Sources

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Research Description

Identifying sources of suspended sediment at catchment scale is essential in order to prioritise erosion control. Despite the rapid development of techniques for identifying sediment sources, the integration of information derived from different techniques is rarely practised.

In this research an integrated approach to monitoring, tracing and modelling is developed to identify the sources of suspended sediment in two coastal catchments in southeastern Australia: the Moruya-Deua and Tuross River catchments. A Weight-of-Evidence approach, adapted from that for risk assessment, is developed to integrate the information from three Lines-of-Evidence:

1) stream monitoring and an analysis of aerial photographs;

2) geochemical and mineralogical sediment tracing for stream junctions; and

3) catchment-scale sediment budget modelling for road, hillslope, gully and streambank erosion.

Compared to individual techniques, the integrated results produced a more confident estimation of the sources of suspended sediment in the study catchments. This research demonstrates an integrated, quantitative and systematic methodology, and maximises the utilisation of sediment source information that is often available, or can be easily obtained for many catchments in Australia.

Nicholas Gellie

Master of Philosphy Scholar

Landscape Susceptibility to Severe Drought, Fire, and Storm

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Research Description

Two key research questions being addressed in my thesis are: 'are there regular or irregular patterns in the coincidences of these factors over time?; what has been the historical exposure to fire risk in the ACT?

The aim of my thesis is to (1) investigate the temporal patterns of seasonal dryness, fire weather and lightning ignition at a single point in the ACT region and (2) determine the coincidences of these factors and the driving climate and weather factors behind the most severe coincidences. The seasonal dryness component of landscape susceptibility will be estimated using a soil dryness index model to monitor the daily dryness of soils over a 65 year period. The fire weather factor will be modelled using either the McArthur or Canadian Forest Fire Danger Rating Systems. The dry lightning ignition factor will be developed from statistical decision trees of the known incidences of lightning in the ACT, as well as afternoon fire weather.

The seasonal and temporal variation in the patterns and coincidences of the risk factors will be analysed using time series analysis in R and S-PLUS. Case studies of the most severe fire seasons will be used to develop a picture of the weather factors driving each fire risk factor.

John (Jake) Spencer Gillen

PhD Scholar

Determining the soil characteristics influencing the distribution of perennial vegetation communities across the Cooper Creek floodplain system in South Australia

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Research Description

The Cooper Creek floodplain system is a unique, internationally significant and increasingly rare example of a naturally functioning unregulated dryland river system. Associated with the iconic "Cooper" is a series of nationally significant wetlands such as those of the Coongie lakes and Kanowana systems in far north east South Australia. The hydrologically dynamic and productive floodplain system supports a rich and diverse biota. Intermittent "hydrological pulses" in association with productive floodplain soils together with subtle variations in land relief result in a myriad of nutrient enriched niches. The research aims to determine the characteristics of the soils associated with the main perennial vegetation communities within the region. The research builds upon prior research conducted in the region during the period 1986-1992. This prior research, using multivariate analyses, revealed the range of vegetation communities in the region and tentatively identified the principal environmental parameters influencing their distribution.

Sarah Goldin

PhD Scholar

Ecosystem services provided by coarse woody debris in yellow box (*Eucalyptus melliodora*) – blakely's red gum (*E. blakelyi*) grassy woodlands.

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Research Description

I am studying Coarse Woody Debris (CWD) in a range of sizes and decay states within the Goorooyarroo Nature Reserve in the Australian Capital Territory. The site supports remnant yellow box (Eucalyptus melliodora) – blakely's red gum (E. blakelyi) grassy woodlands, typical of those found in south-eastern Australia. These woodlands have the unfortunate coincidence of occurring in areas suitable for agriculture, and now approximately 90% have been cleared. CWD has also been removed from these landscapes, because it is considered an obstacle for grazing animals and machinery.

The ecosystem services provided by CWD have generally been overlooked. There is growing interest in using CWD as a restoration treatment to introduce missing structural complexity to modified ecosystems. However, little is known about how CWD influences the microenvironments it creates, especially in the Australian context. It is suggested that within modified Australian woodlands, CWD is a source of nutrients and refugia for flora and fauna, creating 'fertile hotspots' within the landscape. These hotspots may be important sites for restoring ecosystem function to woodlands.

My study will quantify the effects of CWD in modified woodlands by investigating the fundamental drivers and responses of ecosystem function. These include soil temperature, moisture, nutrients and properties, as well as floristic diversity and functional groups.

Martin Golman

PhD Scholar

Resource planning for Samsai Niksek tribal forests of Papua New Guinea-recognising land, people and the forests

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Research Description

In Papua New Guinea (PNG), the forest resources are managed on behalf of the landowners by the Government. Management of these forests by the Government lacks the capacity for proper planning, strategically, tactically and operationally. In addition, planning to integrate resource owners' social and environmental values of their forests is done poorly. As PNG's forest assets are presently managed mostly for timber uses, the future of these resources may be depleted if no strategic planning is adopted. Landowners are the great losers with their own resources along the process of development. These landowners can be a great asset to development of the country if they become key participants in the process of planning and decision making, and to share the wealth of their resources equitably.

This research will develop a multiple use forest planning model in a case study area of Samsai Niksek of East Sepik Province in PNG. Data from customary landowners and the natural environment will be integrated in the model to determine a feasible landuse option for the research area.

This doctoral research is supported by the John Allwright Fellowship of the Australian Centre for International Agricultural Research (ACIAR).

Sue Gould

PhD Scholar

Birds and habitat values of the Weipa plateau tall *Eucalyptus tetrodonta* woodlands and post-mining rehabilitation.

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Research Description

A unique regional ecosystem of tall Eucalyptus tetrodonta woodlands is confined to one of the world's largest bauxite deposits. The bauxite ore body extends along the west coast of Cape York Peninsula for 275 kilometres north to south and 75 kilometres east to west. The combined current bauxite mine leases along the west coast of Cape York Peninsula cover more than 585,500 hectares.

The land surface in the post-mining landscape is lowered by a few metres and there are potentially significant changes in the infiltration and water holding characteristics. Current mining and rehabilitation practices have the potential to alter a high percentage of the tall Eucalyptus tetradonta regional ecosystem.

The primary objective of this research is to understand the long term impacts of mining and associated rehabilitation on the bird habitat values of the Weipa plateau tall Eucalyptus tetradonta woodlands.

Kate Grarock

PhD Scholar

Does removal of Indian Mynas affect native Australian Birds?

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Research Description

I am conducting a removal experiment in Canberra suburbs to see the effect Mynas have on native Australian birds. Five suburbs are "high" myna removal areas, five suburbs are "medium" myna removal areas and five suburbs are used as "control" sites (no mynas removed).

Each of the 15 suburbs are being monitored via transect counts of all bird species present and through 210 nesting boxes (to monitor nesting success of both natives and mynas).

The project started in June 2008 and is planned to continue for 2 years ending in September 2010.

Catherine Gross

PhD Scholar

Applying justice frameworks to environmental decision-making

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Research Description

Perceptions and beliefs about sharing, fairness and a just social order have been discussed for millennia. Yet still the allocation and sharing of natural resources remains a societal problem. In both theory and practice, these topics can generate intense debate, from the breakfast table to the boardroom. Conflicts and disagreements within communities and between stakeholders and decision-makers have become commonplace where decisions concerning natural resources such as wind-power or water are made. At the heart of these conflicts are complex problems involving issues of equity and justice. Although there is a substantial body of research and theory on justice much of this has been abstract or external to a social context. The lack of contextually applied justice research is recognized as a significant gap in environmental resource allocation research. The aim of my PhD is to find out how people interpret and react to perceived fairness, or the lack of fairness, in natural resource decision-making. An important objective will be to create practical tools and guidelines for use by natural resource management practitioners. The research is primarily concerned with decision-making regarding water allocation and use.

Sarah Hemmingsen

PhD scholar

Indigenous traditional resource management: An Australia and New Zealand Comparison

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Research Description

Over the past few decades, recognition of issues important to Indigenous peoples within the ex-settler countries has gained momentum and thrown open many complex debates. The most significant issues are resource sovereignty and the impact of colonisation on Indigenous relationships with the environment. However, while non-Indigenous populations are beginning to realise the value of Indigenous resource management, the ability of Indigenous peoples to carry out appropriate management methods is often restricted or not recognised. In coastal areas, colonisation was a major obstacle for Indigenous ownership, use and management, as colonists viewed coastal areas as a homogeneous water column to be managed as public 'commons'. This framework poses many difficult dilemmas for Indigenous peoples as they face insecurity in their aspirations to control their marine territories and associated resources using traditional management methods.

This research undertakes a comparative study between Australia and New Zealand, to investigate the continuing impact of colonisation on Indigenous management of coastal environments. In spite of the different experiences of colonialism, alienation from land and resources was experienced by both Aboriginal and Maori communities. Understanding how colonialism has impacted on Aboriginal and Maori environmental relationships in the past and continues to influence their ability to participate in coastal management today is an important part of redress.

Patricia Hill

PhD Scholar

Managing N losses in rural landscapes

The use of spatial information and risk management frameworks in balancing production and conservation: a dairy case study

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Research Description

A modified framework for reducing nitrogen pollution from farms is proposed which aims to bridge the gap between on-farm action and off-farm environmental response. The framework (referred to in the thesis as the Nitrogen Loss Management Framework, or the NLM Framework) was designed to utilise readily available data, and was developed to address some of the problems associated with using complex numerical models for modelling nitrogen fluxes in diverse catchments. The framework is a compartmentalised risk management approach, whereby the consequences and likelihood of N loss are determined separately, and then combined to predict the relative risk of nitrogen loss across the farm. It was demonstrated that the potential consequences of N loss could be determined using published information on specific environmental assets. The likelihood of loss, which is difficult to measure and complex to model, could be estimated by combining the potential for N to be transported offsite with the load of N available for loss. Demonstration of the approach to a case-study farm showed that significant environmental and economic benefits may be obtained through better-informed, spatially explicit nitrogen management at the sub-farm scale.

Ngoc Son Ho

PhD Scholar
Vulnerability of forest-human systems to the impacts of climate change in Vietnam

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Research Description

It is likely that Vietnam will face some degree of climate change over the coming years. Natural resource based industries such as agriculture, fisheries and forestry, are particularly vulnerable to these risks, and the poor are considered as being the most vulnerable. Therefore, the need to increase the adaptive capacity of people to deal with climate change risks has been identified as a priority in Vietnam. The overall objective of this study is to improve the understanding of the vulnerability of forest-human systems to the potential impacts of climate change in Vietnam. The main question addressed is how forest-human systems in Vietnam are vulnerable to the current and future impacts of climate change, and how can policy and management respond? This study will use a 'bottom-up' approach to examine the vulnerability of the systems being impacted. The focus will be on the biophysical and socio-economic characteristics of these systems. The study will be conducted in northern mountain regions of Vietnam.

Van Chieu Hoang

PhD Scholar

Cooperation between protected area authorities and local people in the management of protected areas in the Northeast of Vietnam

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Research Description

Currently, management of all protected areas (Special Use Forests) in Vietnam is carried out by state forestry agencies. Management of these forests is facing difficulties that result in degradation of forest resources. One of the important factors that cause such difficulties is unplanned extraction of forest resources by local people. Indigenous people living inside and around protected areas are carrying out much of this extraction. Generally, they are poor farmers who depend heavily on forest resources for their daily needs. However, they have not been involved effectively in the protected area management. In such context, by studying the management of protected areas in northern Vietnam, this research aims to develop effective arrangements for cooperation between protected area authorities and local people in order to gain dual goals of biodiversity conservation and sustaining local people's livelihoods.

Viveka Turnbull Hocking

PhD Scholar

Design-led Methods for Sustainability

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Research Description

Something about: Design as Research, Sustainability and Significant Value.

A metadesign project > Reorienting design towards 'non-object-orientated design' making central the activity of design > Highlighting design's place in the system of everyday life and its role in generating our 'culture of living' > Opening up the design conversation and sharing the ability to design > Establishing the activity of design as a kind of research methodology with an aptitude for answering questions about the future > Developing a design-led method of significant value both to the field of Design and the research community at large like the social sciences > Showing how such design-led research and research-led design can contribute to contemporary agendas like sustainability.

Kevin Jeanes

PhD Scholar

Forest Loss and Climatic Impact upon River Flow Regimes, Singkarak - Ombilin River Basin, West Sumatra, Indonesia

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Research Description

It is evident throughout Indonesia, SE Asia and the tropics world-wide that natural tropical forests are disappearing and that water resources are widely degrading in quantity or quality, or reaching their limits of supply versus increasing water use demand. Yet, there is an on-going global scientific debate in the field of tropical forest hydrology and varying opinions as to the likely impacts of forest loss upon water resources. In light of this scientific debate the current research seeks to explore and review the current 'new hydrology philosophy' where recent findings of some leading tropical hydrologists suggest that the maintenance or loss of natural forest (i.e. cover of trees) may not be the most crucial factor for the preservation of all catchment functions. However others warn that the linkage between forest and water is more complicated.

With a case study focus upon the Singkarak lake and upper Ombilin river basins of West Sumatra province, the research focuses upon a systematic exploration of the bio-physical factors that lie behind, or are acting in conjunction with, the impact of forest loss and land use change upon watershed functions within the forested uplands of West Sumatra. The study aims firstly to explore the impacts upon river basin and catchment capacity to buffer peak rain events and release water gradually (i.e. the elements of seasonal river flow stability). Secondly it will explore the impact upon the river basin and catchment capacity to transmit water in the form of total annual yield and maintain water quality (in form of reduced sediment and pollution transport).

The doctoral research is currently carried out under guidance of the Integrated Catchment Assessment and Management Centre within the Fenner School, with a collaborative linkage to, and advisory support from, the World Agro-Forestry Centre (ICRAF), South East Asian Regional Office, Bogor, Indonesia. Financial assistance, in the form of an ANU Miscellaneous Scholarship from the Colleges of Science, has supported the research since Year 2 of the program.

Stefan Kaufman

PhD Scholar

The roles of reflexivity in intentional social change for sustainability

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Research Description

Key thinkers in human ecology, and elsewhere, are arguing that the transition to a sustainable civilisation will require consciously changing the way we understand and act in the world as a species. However, the most powerful, compelling accounts of reality that humans experience are always our own. Consequently, 'reflexivity' becomes a necessary (if not sufficient) part of that transition. Reflexivity, in this sense, is reflection on the influence of our identity, social setting, time and place on our own learning and understanding of human situations. Re-modernisation theory strongly argues that the experience of reflexivity in modernity is a confusing and dis-empowering one. As such, the theory suggests that the prospects of achieving intentional social change are ambiguous at best. However, it also hints at the prospect of some alternative(s) to the modern way of knowing and acting that offer some hope. The primary research of this thesis is an examination of the efforts of two organisations attempting to cause intentional social change from within the heart of modernity, the academic sector. I am attempting to relate their successes and frustrations to a critical evaluation of re-modernisation theory. This inquiry may indicate a path beyond the theory's negative implications. Particularly, the research may show that the agenda of Integration in research and policy is an antidote to the conditions of re-modernisation, and so indicate some concrete directions out of ambiguity and confusion. If this conclusion is supportable, it will mean that we can explicitly link Integration (within and between knowledges and governance) to the experience of reflexivity for individuals, and its promotion as a societal characteristic. This would also demonstrate value and suggest the criteria for facilitating supportive structures for reflexivity in efforts to monitor and influence the development of our civilisation.

Supervisors: Valerie Brown, Rob Dyball.

Publications:

Kaufman, S.; Symons, W.; Bachar, Z., 2006, The Green Steps Program: fostering environmental change agents, in Advances in Sustainability in Australasian Universities, Bern: Peter Lang Publishing Group.

Dyball, R.; Beavis, S.; Kaufman, S.,2005. Complex adaptive systems: models of social learning and sustainability, in Social Learning for Sustainability. M. Keen, V. Brown and R. Dyball (Eds.), Earthscan.

Peer reviewed conference papers:

Kaufman, S. 2005 Investigating the role of reflexivity in intentionally achieving social change for sustainability: Social Learning and Social Marketing compared, Presented at Environment, Knowledge and Democracy, hosted by RC 24 of the International Sociological Association, the University of the Mediterranean, Department of Human Sciences,DESMID-UMR Espace and the SHADYC (EHESS-CNRS), Marseille, July 2005.

Kaufman, S.,2002. Why people (don't) carpool, a conference paper based on honours research, presented at the 2nd National Conference of Sustainable Campuses, RMIT, Melbourne, September 2002

Haksoo Kim

PhD scholar

Separation of Climate and Land Use Effects on Hydrology

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Research Description

With climate change and water use competition being ever more important considerations in catchment management, improved understanding of the sensitivity of catchment response to climate and land use is paramount. This understanding includes the susceptibility of a catchment's response characteristics to shifts in the magnitude and seasonality of rainfall, temperature increases, as well as the impact of large scale land use changes.

This study focuses on the use of tools to isolate the impacts of land use variations, such as farm dams and other drivers like surface and groundwater extractions, from climate variability to identify effects on streamflow properties. Major subcatchments of the Googong (Queanbeyan River at Tinderry) and Cotter catchments (Cotter River at Gingera) are used.

Rakhyun Kim

PhD Scholar

The Interplay between the UNFCCC and the CBD

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Research Description

This PhD thesis investigates the interplay between the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention on Biological Diversity (CBD). The thesis aims to (1) examine to what extent and in what ways the two treaty regimes are synergistic and complementary or antagonistic and contradictory; (2) evaluate whether they are adequate to protect global ecological integrity; and (3) where they are considered inadequate, investigate the reasons why, and propose mechanisms to improve the effectiveness of the two treaty regimes.

Marit Kragt

PhD Scholar

Integrating Economic Values in Catchment Modelling

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Research Description

Changes to land use and land management in Australian catchments have led to pressures on water resources and concerns over water quality and ecosystem health in rivers and estuaries. There is limited information about the impacts of catchment management on water quality in rivers and estuaries, and the subsequent impacts on environmental and economic systems.

In this research, an integrated model will be developed for a case-study of the Georges Bay catchment in Tasmania. The model aims to assess the environmental and economic effects of changes in land use and management, focusing on river rehabilitation actions and water quality improvements. Biophysical models are developed to predict changes in water quality and effects on river and estuary ecology. Economic valuation techniques (Choice Modelling) will be employed to estimate the non-market values affected by changes in river and estuarine water quality. An integrated model is developed to allow an assessment of the trade-offs between environmental and socio-economic systems.

This study is supervised by Professor Jeff Bennett (Crawford School), Professor Tony Jakeman (iCAM – Fenner School) and Dr Lachlan Newham (iCAM – Fenner School). Financial support is provided by the Landscape Logic and Environmental Economics Research Hubs.

Carola Kuramotto de Bednarik

PhD Scholar
Relative importance of fire regimes, environmental gradients and climate change for rainforest distribution in the Sydney region.

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Research Description

The distribution of rainforests across Australian landscapes has been proposed to be determined by a range of environmental factors including historical fire regimes, climatic variation, soil fertility and characteristics, topography, water availability and plant vital attributes. Fire regimes are of particular interest for rainforest distribution. Although some rainforests species are able to resprout after a fire, there is evidence suggesting that frequent and severe fires can eliminate even these species from the landscape. This problem is likely to be exacerbated under climate change conditions for which fire frequency and intensity have been forecasted to increase.

I am investigating the key factors contributing to the persistence of rainforest in the Sydney region, and how incompatible fire regimes may change rainforest distribution. The Sydney region is an ideal landscape for this investigation as the relative high incidence of both natural and anthropogenic fires may impact negatively on rainforests. This information is vital for developing optimal strategies for rainforest conservation and management under present and changed condition. This project will also increase our understanding of the effects of fire on species considered to be fire intolerant and will provide methodological innovations for species distribution modelling.

Neil Lazarow

PhD Scholar

An investigation into decision-making and institutional arrangements for coastal planning and management.

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Research Description

In an era of increasing emphasis of stakeholder engagement in environmental management, and of focus on the crucial importance of the marine coastal zone, the actual and potential role of marine and coastal communities and stakeholders has been little documented or analysed. Surfing is a major recreational and economic activity involving intimate human interaction with diverse coastal environments, and is expanding in intensity in traditional locations, involving environmental and social/cultural impacts, as well as in engagement with mitigating these impacts and the impacts of other human activities.

In recent years, there has been a sharp rise in the significance of organised groups within the surfing community in environmental and social advocacy and in processes of environmental policy and management. The groundswell for increased demands for public participation "has been attributed to (among other things) over-centralisation of government, the indifference and unresponsiveness of public authorities and perceptions of the state as an arm of business interests."

This study examines the impacts of surfing on local environments and the role of individual and especially organised surfers in shaping environmental perceptions, policy and management in specific locales. The aims of the research include the intellectual contribution of generating new insights to the existing public policy literature, better understanding of interactions within and between human and natural systems as well as to generate operational recommendations in coastal management in Australia and internationally.

Alex Lee

PhD Scholar

Utilising airborne scanning laser (LiDAR) to improve the estimation of Australian forest structure & biomass.

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Research Description

Improving forest measurement is required to provide a better understanding of forest stocks and dynamics, assist with sustainable forest management decisions, and meet national and international reporting needs, including those surrounding climate change. In Australia, the National Forest Inventory has initiated the Continental Forest Monitoring Framework (CFMF) as a way of meeting these requirements, through a multi-scale approach utilising a range of data, sourced from both field and remote sensing. Given the multi-scale approach of the CFMF, it is important to understand how scale potentially affects the interpretation and reporting of forest from a range of data. Therefore this research has developed a multi-scale strategy for utilising fine scale (~1m) airborne LiDAR for remotely sensed data calibration, at two study sites (1,125ha in central Queensland, and 60,000ha in NE Victoria). The strategy is used to investigate how forest structure is defined through 3D modelling combined with empirical relationships. This allows enhanced calibration of a range of coarser scale data (e.g. Landsat, radar, and ICESat laser), which may form part of a national monitoring strategy. This research has concluded that LiDAR data can provide calibration information just as detailed and possibly more accurately than field measurements for many required forest attributes.

Peter (Sang-Hoon) Lee

PhD scholar

The use of satellite-borne data to investigate the relationship between vegetation-related bird habitat resources and bird species diversity, abundance and distribution: a case study in the Great Western Woodlands of southern Western Australia

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Research Description

For the purpose of conserving the largest temperate woodland in the world, I use remotely sensed data sets to predict bird diversity, abundance and distribution on the basis of vegetation structure-based habitat resources. In southern Western Australia, there remains around 16 million hectares of continuous temperate woodland, located from the east of the Wheatbelt to the west of the Nullarbor Plain named the Great Western Woodlands (GWW). The structure and productivity of vegetation strongly affect bird habitats. So, satellite data sets are used for providing possible sources of land cover maps to efficiently analyse vegetational attributes in terms of bird habitat resources. By combining GLAS data for vegetation height and vertical structure with three other satellite imageries including MODIS, ASTER and PALSAR for productivity in time series, patterning and biomass of the GWW, it might be possible to generate a three dimensional vegetation structure map at a temporal scale in order to gain novel understandings of this research region. The chief aims are to (1) develop a methodology for producing a map for identifying bird habitat resources in the GWW from satellite data, and (2) predict bird species diversity, abundance and distribution.

Peter Lezaich

Master of Philosophy Scholar

An investigation of how plantations in the landscape interact with other rural based enterprises and the social outcomes arising from these interactions.

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Research Description

The debate about the social, economic and environmental impacts of tree plantations in the rural landscape remains largely unresolved, even with the expanding body of work that has demonstrated the predominantly positive nature of the impacts of plantation expansion.

One tool that is not available to communities (that wish to understand the changes that arise as a result of plantation expansion), is a landscape model of the social and economic changes that occur in response to plantation establishment. This project will investigate how plantations in the landscape interact with other rural based enterprises, such as cropping and grazing and the social and economic changes that occur a a direct result of their situation within the landscape, for rural urban and agricultural communities.

The project will utilise statistical methods and GIS technology in seeking to develop techniques for modelling the interaction of social and economic catchments within the physical landscape. The development of such models can provide insights into the changing social and economic circumstances of rural communities in a spatial and temporal context.

Tasmania has been selected as the study region as it has an active plantation sector, a variety of agricultural industries and a mixture of different sized local communities.

Edwina Loxton

PhD Scholar

Assessing socio-economic impacts of closure of native forest to timber harvest

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Research Description

My research interests focus on the social impacts (both negative and positive) of environmental management policy and decision making processes. This research area interests me because environmental management is highly influenced by people's behaviour, values and priorities.

My PhD project will assess the socio-economic impacts that have occurred due to changed access to native forest for timber harvesting. In particular, I will explore the social affects of the Regional Forest Agreement Process, which produced a twenty year agreement between Federal and State governments concerning the management of native forests.

Prior to beginning my PhD in 2008, I completed BSc. Honours (Resource and Environmental Management), also at ANU. My Honours project explored the participation of Indigenous people in the forest industry.

Forest and Wood Products Australia scholarship holder
(CRC for Forestry affiliate)

Lynette Liddle

PhD Scholar

Conservation of encrypted landscapes - a landscape ecology perspective of Aboriginal conservation goals

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Research Description

Conservation values are strongly linked to what people derive, understand and know about, and how they manage, country. Conservation in many parts of Arid Australia is reflected in the landscape values of the people. I am investigating to what extent Aboriginal conservation strategies are evidence of adaptive management and a response to ecosystem change. Conservation and its values have an inherent value in which Aboriginal people are motivated to conserve the animals, plants and land units on country. An explanation of their conservation goals, what role Aboriginal people may have in mainstream conservation, and what this role might become are key questions in the thesis.

The aim of this research is to analyse and investigate the values behind Aboriginal conservation and how this is underpinned by linkages between ecology of the land and culture.

Publication

Trappe, J.M., Claridge, A.W., Claridge, D.L. and Liddle, L. (2008). Desert Truffles of the Australian Outback: Ecology, Ethnomycology, and Taxonomy. Economic Botany, 62(3): 497-506.

David Little

PhD Scholar

Biologically mediated weathering in the rhizosphere of Australian forest soils

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Research Description

Soils and regolith are particularly interesting because of commonly observed emergent patterns that develop over time in response to climate, geology, topography and biological activity. Traditionally, biota-soil interrelationships have been ignored or over-simplified, and few studies have examined the impact of trees on soils in the rhizosphere. Recognition of the importance of rhizosphere processes and recent rapid technological advancement have opened up many avenues for biogeochemical investigation in the rhizosphere.

My research examines roles of low molecular weight organic acid root exudates in providing an essential component of microbial habitat, as well as in mobilising soil metals by such processes as ligand exchange and adsorption to soil minerals. Detailed chemical, mineralogical and microbiological investigations were undertaken using rhizosphere and non-rhizosphere soils under co-occurring Eucalyptus mannifera and Acacia falciformis in a dry sclerophyll forest at Mulloon Creek, Bungendore (NSW).

This research contributes to the scientific understanding of organic acid – mineral and organic acid – soil microbial community interactions in a forest soil rhizosphere, and has specific implications for understanding:

- biogeochemical cycling and biological weathering in Australian forest soils,
- landscape function, aiding vegetation rehabilitation and bioremediation strategies on degraded or contaminated lands, and
- geochemical exploration, by providing information on how metals move through the rhizosphere to the root, and then how these elements are expressed in the above ground biomass.

Arianne Lowe

PhD Scholar

Towards improved theory and practice in evaluation of conservation projects

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Research Description

Globally, significant effort and investment is committed to environmental conservation. This investment is increasing due to heightened public recognition of the impacts of climate change. How much conservation projects can achieve will be determined by the efficacy of this investment. Rigorous comparison of projects using robust evaluation methods is critical to establishing priorities and ranking expenditure options. This research initially reviewed the recent status of project evaluation in the published, peer-reviewed conservation literature. In vivo, "live" case studies were then utilised to investigate current methods and develop further understanding of the evaluation process and effective implementation and outcomes. The first case study involved the Southern Rivers Bush Incentives, an Australian government initiative of the Southern Rivers Catchment Management Authority. The pilot program aims to protect native flora and fauna across privately owned land within the catchment area. It is an auction-based approach with landholders funded to conserve land over five to ten years. The second, contrasting case study involved collaboration with an international non-government organisation, The Nature Conservancy, on a review of a peer-learning network in the Pacific, 'Micronesians in Conservation'. This program was established to increase collaboration and effectiveness of conservation leaders across the region. Findings distilled from the case studies highlight important principles and a framework for evaluation in environmental conservation.

Cameron Muir

PhD Scholar

After the fall: Response to environmental degradation on the western plains

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Research Description

The collapse of the pastoral industry at the end of the 19th Century, and subsequent Royal Commission into Western Lands, heralded the end of unrestrained frontier expansion in New South Wales.

The state took a greater role in administration of the environment and established agricultural science's place as the dominant knowledge system through which rural places were known. Instead of beginning with a 'pristine' environment and charting its decline, my research follows an industrial society's attempts at living in the aftermath of rapid ecological change. The story is centred on the drive to develop the plains along the Macquarie River over the last 100 years. Attempts were made to 'drought-proof' the plains but more environmental crisis and social turmoil followed. At each crisis there were public calls for the need to protect the environment and plan for the long term.

This environmental history examines what happens when a narrow set of values dominates the knowledge of place. It asks how industry-focused agricultural science has maintained its ascendancy in rural Australia over the last 100 years, how it has shaped rural environments, and what holistic alternatives have emerged.

Kulala Mulung

PhD Scholar

Land owner decision making processes in relation to commercial tree growing in Papua New Guinea.

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Research Description

The long term sustainability, productivity and utilisation of forest resources in Papua New Guinea hinges on decision outcomes of indigenous people in making critical land use choices, including those on whether or not to adopt and participate in growing commercially valuable trees. This is particularly important, given the complexities of land tenure and ownership arrangements inPNG. Although crucial, limited attention has been directed at conducting studies in an objective and systematic manner to reveal understanding of the social and cultural processes associated with decision making to land use for small holder production purposes.

This study explores various aspects of land owner decision making processes, by posing the question "What are the key aspects of PNG landowners' decision making processes that are relevant to growing commercially valuable trees?" Within this broad research question, the study asks: How do PNG land owners make land use decisions; What are the key factors influencing those decisions; and in that context, what are the key constraints to adoption of commercial tree growing? An understanding of these issues will facilitate tree growing activities and contribute towards sustainable forest management practices in PNG.

The field work includes interviews, observations and collecting data from secondary sources for the three selected communities at Mari, Waffa and OK Tedi areas of Madang, Morobe and Western Provinces respectively, in PNG.

Nicola Munro

PhD Scholar

The biodiversity value of revegetation in agricultural landscapes

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Research Description

Revegetation has been hailed in Australia as a potential solution to land degradation problems and biodiversity loss caused by clearance and fragmentation. Existing work suggests that revegetation can provide some habitat for wildlife but that species of greatest conservation concern do not necessarily benefit from plantings. This has been attributed partly to poor structural complexity in the plantings. Structural complexity can be increased by the planting of understorey species. 'Best-practice' revegetation which includes understorey has been planted extensively in Gippsland, Victoria. This project takes the rare opportunity to assess and compare both 'best-practice' revegetation and poor-practice revegetation, as well as remnants and paddocks (as reference sites) for their structure, function and composition. I compared the development of vegetation structural complexity and floristic richness in the revegetation plantings, and the functional attributes of the plantings. I also assessed the response of birds and arboreal mammals to the plantings. The study also assessed the related effects of patch size, vegetation quality and surrounding vegetation cover on fauna, flora and function. I have compared the total amount of vegetation cover (landscape scale restoration) with the vegetation 'quality' (patch scale restoration) to determine which is more important for biodiversity conservation.

Kate Park

PhD Scholar

The influence of land management factors on bird assemblages using riparian land in an agricultural system: a scale analysis

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Research Description

Increasingly within Australian agricultural landscapes, the important role of streamside vegetation as habitat for terrestrial wildlife is being recognised. However, maintenance of riparian habitat has focused on land management at the local scale, with little attention being paid to the influence of management practices within adjacent upland ecosystems. This research aims to investigate the influence on bird assemblages of land management factors across multiple spatial scales. Bird species utilising riparian land within farmland on the Southern Tablelands of NSW will be investigated. The influence of a variety of land management practices operating at scales ranging from the riparian vegetation itself, to the entire catchment will be explored. It is anticipated that these results will provide a greater understanding of the relationship between riparian and terrestrial ecosystems, and thus allow recommendations to be made regarding the conservation of riparian habitat for birds within agricultural systems.

John Paull

PhD scholar

The Memetics of Organics

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Research Description

The idea of organic farming is one of the most successful and enduring of green ideas. The memetic development of organics is analysed from the first articulation by Northbourne (Paull, 2006, www.orgprints.org/10138) as it has moved from canon to coda. Beginning in war-distracted Britain in 1940, organics has grown to a A$50 billion worldwide enterprise, practiced in more than 120 countries.

The gestation of the organic idea is examined. The military model of agriculture (the war on weeds) took hold in parallel with the organic model of agriculture; they remain contesting models for the future of the world's food supply.

The progress of the organic meme is traced from south east England across the Channel, the Atlantic, to Australasia, and recently to China (Paull, 2007, www.orgprints.org/10949) - in that case for a suite of environmental, economic and demographic reasons.

Milestone events are examined, including Silent Spring and Chernobyl, as phenomena that added momentum to the organic movement.

Organics is evolving (e.g.organic fibres and personal products) and tested and contested with emerging peri-agricultural extensions including organic water and certified organic forestry (Paull, 2008, www.orgprints.org/14766) and fresh challenges such as nanotechnology (Paull & Lyons, 2008, www.orgprints.org/13569). Scenarios for the future of organics are examined.

Felicia Pereoglou

PhD Scholar

Eastern Chestnut Mice (*Pseudomys gracilicaudatus*) in the post-fire environment

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Research Description

Native rodents are a group that are poorly conserved in Australia. The Eastern Chestnut Mouse Pseudomys gracilicaudatus is one example; considered Vulnerable (Schedule 2 Threatened Species Conservation Act 1995 NSW), restricted to heath throughout much of its range, and dependent on regular fire. Pseudomys gracilicaudatus was thought to be extinct in southern Australia until 2002 when it was rediscovered in the Jervis Bay region. The region now supports the only contemporary population of P. gracilicaudatus south of Gosford providing a unique opportunity to study environmental factors that predict the species' occurrence, refuge requirements and nesting behaviour, socio-biology and population genetic structure post-fire at a local scale, across a landscape and at the southern limit of the species' known distribution. This research is integral to our understanding of the mechanisms that low density populations of threatened species such as P. gracilicaudatus use to persist in disturbed/post-fire environments. Identification of the complexities and underlying mechanisms promoting a fire-fauna interaction is a plausible solution to the recovery of populations of P. gracilicaudatus and is potentially applicable to other low density, threatened, and/or conventionally 'small' small mammal populations.

Jamie Pittock

PhD Scholar

Integrating management of rivers and climate change.

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Research Description

Most assessments of climate change and water have focused on direct impacts such as changes in volume and increased variability of run off. Many governments, however, are advocating climate change mitigation and adaptation policies, such as increasing irrigation for biofuel production, increasing hydroelectricity production, changed catchment land use dynamics and interbasin water transfers, that may greatly increase impacts on water resources and freshwater ecosystems.

In a situation where societies are already struggling to govern rivers well, few societies appear to have considered how best to adequately assess the impact of climate change on rivers and water, integrate climate, river management and water policies to identify optimal solutions, and enhance sustainable river management.

My research examines:

challenges currently experienced in sustainably managing rivers, including governance of river basins;

likely direct impacts of climate change on river basins, including on environmental attributes of rivers valued by society;

likely indirect impacts of climate mitigation and adaptation policies on river basins, including on environmental attributes of rivers valued by society;

possible contributions to mitigation of greenhouse gas emissions that may arise from enhanced river management.

Empirical research is being undertaken on adaptation on freshwater management based on six WWF projects in developing countries, namely China, India, Tanzania, lower Danube, Mexico and Brazil. The research aims to identify best practice methods for societies to assess and manage the vulnerability of river basins to the direct and indirect impacts of climate change, and the contribution river management can make to mitigation of greenhouse gas emissions. The research focuses on enhancements required to governance of river basins to more sustainably manage rivers in the face of climate change. The research draws on areas including institutional theory and design, integrated water resource management, climate science, vulnerability assessment, along with extensive empirical investigation.

Luciana Laura Porfirio

PhD Scholar

The ecosystem services in the Australian Capital Territory and surrounding region

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Research Description

The main goal of this study is to understand how the changing human-environment interactions affect the provision of ecosystem services. I am using a remote-sensing based methodology for estimating the regional impacts of human developments on ecosystems structure and function. The specific objectives include describing land use/ land cover patterns in the Australian Capital Territory and surrounding region, and to characterize qualitatively and quantitatively the services that the ACT/ Region's ecosystems provide to humans.

Sue Powell

PhD Scholar

Modelling flood dynamics and vegetation response in a regulated floodplain wetland

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Research Description

Ecological processes in floodplain wetland systems are largely driven by the wetting and drying cycles (flood dynamics) provided from periodic or episodic flooding. The response of vegetation is a product of the flood dynamics. Regulation of river systems and the associated extraction and diversion of water may alter these dynamics impacting on the vegetation response. To provide effective environmental flow provisions the flood dynamics required to maintain floodplain and wetland vegetation need to be clearly understood.

This study will investigate the flood dynamics operating in a regulated floodplain wetlands system and how these flood dynamics influence the vegetation response using satellite imagery and remote sensing techniques. Using this knowledge, modelling approaches will be explored to provide this information in a form that can be used to inform decision making in water allocation and policy development. The Gwydir wetlands, an internationally recognised inland terminal floodplain system of the regulated Gwydir River, will be used as a case study to undertake this research.

Karissa Preuss

Master of Philosophy Scholar

Generating Indigenous livelihoods through land management: Strategies and structures for success in desert Australia

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Research Description

Over the past few decades Aboriginal Land Management (ALM) has become a well-recognised livelihood strategy for the development of remote Australian Aboriginal settlements.

There is a growing consensus that in addition to environmental benefits, ALM can assist in generating livelihood outcomes, including improved health and well-being, social cohesion and economic development. As a result, Federal and State governments and Aboriginal Councils are providing increased support and funding for ALM initiatives.

Despite this increase in support and funding, there still remains a paucity of information regarding the structures and strategies needed to effectively implement and run these projects. This is particularly relevant in Central Australia where externally funded ALM initiatives are still emerging.

This research aims to investigate the structures and strategies that best support the improvement of livelihoods through ALM desert Australia. Developed in response to community aspirations and funded by the Desert Knowledge Cooperative Research Centre, this research will be based on a case study of the remote Central Australian Aboriginal community of Yuendumu.

Julian Reid

PhD Scholar

Biological Diversity in Arid Australia

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Research Description

With reference to existing theory in community ecology, landscape ecology and ecological biogeography and published studies of Australian diversity and species turnover, and using comprehensive data sets gathered from different parts of central Australia, I am aiming to:

- document patterns of diversity across arid Australia for a broad range of taxonomic groups;
- elucidate the important determinants of diversity in arid Australia;
- determine whether the patterns discerned and explanations offered for arid Australia can be reconciled with data and theory derived from arid regions in other parts of the world;
- determine whether these patterns and explanations accord with results and theory from other biomes and climatic zones.

Richard Reilly

PhD Scholar

Fertiliser derived nitrogen impacts on agricultural acid sulphate soils

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Research Description

Nitrogen based fertilisers are often applied in excess of plant uptake requirements in agricultural cropping environments. This soil nitrogen is vulnerable to loss through gaseous emission and/or leaching under particular soil profile conditions. This study examines nitrate leaching in sugarcane acid sulphate soils and evaluates the potential for nitrate reduction to occur in the presence of anaerobic pyrite oxidation.

Lisa Robins

PhD Scholar

Enabling Regional NRM Boards through effective capacity building measures

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Research Description

Natural resource management (NRM) at the catchment or regional level in Australia is increasingly characterised by the devolution of decision-making and resources to regional bodies. This research examines the capacity of community-based regional NRM Boards, as the principal decision-making fora for NRM at the regional level, to make informed choices. The sustainability of agricultural land and water use and management practices sits at the heart of their deliberations. Visions for future landscapes and mechanisms for transforming landscapes are being debated and agreed (eg water access rights, incentive provisions). The implications, both positive and negative, for industries and rural communities specifically and the Australian community more broadly will be significant, in terms of social, economic and environmental outcomes.

This research will draw on experiences in NRM, health (internationally) and risk and emergency management (in Australia), as well as in NRM in Canada, to identify capacity building measures that could assist regional NRM Boards to perform more effectively. In doing so, it will also identify some of the limitations of Boards as regional decision-making bodies for NRM.

Andrew Ross

PhD Scholar

Conjunctive Water Management in the Murray Darling Basin

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Research Description

Conjunctive water management (CWM) is thejoint or coordinated management of surface (SW) and groundwater (GW) resources. Connected SW and GW resources can be managed as a single resource. Unconnected resources in the same region and/or with common users can be managed in a coordinated manner to achieve common objectives. Currently most SW and GW resources are managed separately whether they are connected or not. CWM can achieve more efficient and flexible use of scarce water, for example by storing water underground and extracting it when and where it is needed. My PhD examines the rationale for CWM and how it can be implemented to improve water management outcomes in the Murray Darling Basin. What are the priorities and conditions for implementing sustainable CWM, including infrastructure, knowledge and governance systems, and adaptive management to allow for complexity, uncertainty and information gaps? What are the opportunities for and barriers to CWM? How have water laws, rules in use and management organisations affected the implementation of CWM? What are the prospects for further development of CWM in the MDB? This research will include case studies from Australia and the USA with participation by government and industry representatives.

Nalish Sam

PhD Scholar

Linking knowledge systems to enhance sustainable forest management in Melanesia: understanding the process of knowledge exchange and adoption by forest users

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Research Description

There are a number of different but related knowledge systems relevant to the use and management of forests. Knowledge systems including scientific, organizational and local or indigenous knowledge developed through different processes and produce different forms of knowledge. Individuals, communities and organisations vary in their capacity and preference for different forms of knowledge. The challenge is to develop a knowledge exchange process that links different knowledge systems and knowledge forms that is effective for improving sustainable forest management in Melanesia. The research focuses on how different knowledge systems might best be integrated, using forest management in Papua New Guinea as a case study.

Debbie Saunders

PhD Scholar

Ecology and conservation of the Swift Parrot – an endangered austral migrant

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Research Description

The endangered Swift Parrot migrates north from its breeding grounds in Tasmania to over-winter across south-eastern mainland Australia each year. My PhD research examined the dynamic use of foraging habitat by the Swift Parrot at various spatial and temporal scales throughout its wintering range, and the implications for conservation. Following on from this, my current Fenner School Publishing Fellowship focuses on publishing more of my thesis work. In late 2008 I commence a Post Doctoral research project with the Max Planck Institute for Ornithology, Germany on Tracking Swift Parrot Migration in Australia. This research aims to track Swift Parrots throughout their migratory cycle, to demonstrate the essential connections between each part of the cycle and how the birds move across the landscape, for improved conservation of this threatened species.

Chalermpol Samranpong

PhD Scholar

Integrated assessment of environmental issues in a catchment of Northern Thailand

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Research Description

The changes in socioeconomic values as well as increasing population are the major factors contributing to increasing natural resource use in rural areas in the upper parts of northern Thailand. Agriculturalists need to expand cultivated land for food production; and at the same time, local competition for all types of natural resources is intensifying, often resulting in degradation of ecosystem and human activities, especially agriculture.

The aim of this research is to inform improved sustainable outcomes at a catchment scale by integrating and identifying the appropriate knowledge sources, and investigating policy options and their effects on sustainable outcomes. This research will use the Mae Tha catchment as a study area. Three significant issues will be investigated: water and land resource management, ecosystem health, and economic benefit and risk. Methods for decision support system using knowledge integration will be developed spatially to understand and analyse the differences among the sub-catchments and the different policies available to them and the effects of these. This system will include GIS and Bayesian Networks principles to enhance decision-making.

Ian Scanlan

PhD Scholar

Mapping landscape scale variation in the canopy structure of wet eucalypt forests in southern Tasmania

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Research Description

The biophysical structure of the forest canopy is one of the key attributes used to characterise a forest at the scale of an individual stand. The overarching objective of my research is to use a ground-based methodology for modelling canopy structural diversity at this scale to describe and classify 'ecologically meaningful' canopy structural archetypes in wet eucalypt forest. If there are significant correlations between these canopy archetypes and remotely sensed data characterising their structure using LiDAR (LIght Detection And Ranging) technology, then it may then be possible to predict where these archetypes occur in the landscape based solely on the remotely-sensed data. The ability to map canopy structure remotely will allow changes in structure (both at the stand and landscape scale) to be monitored over time in a cost-effective manner, and to enable comparisons between the mosaics of canopy structures that are the result of different management regimes.

Catherine Simpson

PhD Scholar

Predictive modelling of stand structural complexity of dry sclerophyll forests on the Southern Tablelands, NSW, using remotely sensed and GIS data

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Research Description

This research explored the value of spatial information derived form satellite imagery for improving predictions of within-stand variations in structural complexity for a representative sample of dry sclerophyll forests (DSF) on the Southern Tablelands of New South Wales, Australia. Relationships between spectral and spatial information from satellite imagery, along with abiotic environmental variables, were compared to field measurements of a structural complexity index and biophysical parameters using regression analysis. Despite the moderate accuracy of predictions, the results obtained have been consistent with other attempts to estimate structural attributes of open eucalypt vegetation.

The estimates of forest stand structural complexity provide natural resource managers with information on the relative structural complexity of native vegetation stands within the landscape to underpin management strategies that enhance the biodiversity conservation and economic values of DSF. The utility of spatial information from finer spatial resolution imagery for predictive modelling of vegetation structure is a key research priority since the moderate resolution of Landsat imagery limited the sensitivity of its spatial derivatives in the current study.

Peter Somerville

PhD Scholar

Stream and groundwater interactions and the impact on salinity in the upper Hunter Valley, New South Wales.

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Research Description

This project investigates the source of salinity in stream and groundwater in Widden Brook, an alluvial unconfined aquifer system in the upper Hunter Valley, New South Wales. One hypothesis being tested is that mineral weathering of coal measures, shales, sandstones and basalt in the catchment is a significant source of salinity in the surface waters. Results from hydrology and water chemistry analysis indicate that stream and groundwater are highly connected, baseflow is a major component of stream flow and groundwater is a major contributor of salt to surface water. Replacement of deep rooted native trees with shallow rooted pasture and crops has been often assumed to be the cause in some catchments of rises in saline groundwater surfaces with increased saline discharge into streams. The salinity in the groundwater is often presumed to be of meteoric origin from atmospherically advected sea salt which recharges to groundwater. However, forest cover in the catchment is approximately 83% and the long term output:input ratio (discharge of salt) from the catchment is approximately 4. This finding similar to other catchments in the upper Hunter and has implications for management of salinity in Hunter Valley catchments by constructing weirs and dams in perennial streams to combat drought.

Annabel Smith

PhD Scholar

A development of post-fire succession theory for reptiles using demographic and genetic data from multiple species.

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Research Description

Fire is an integral part of many ecosystems but human induced changes in land use and climate mean that new ways of managing fire in natural habitats are necessary. Many animal species are sensitive to fire, with some relying on old-growth unburnt habitat, while others are more abundant in recently burnt sites. Biodiversity may be at risk if fire regimes are not implemented at scales which incorporate the complexity of fire responses in animal communities.

A number of biological factors of an animal species may influence its successional response including its dispersal rate, life history traits and behaviour. This project will build on simple habitat-use models which have previously been used to explain succession in reptiles by including detailed information on demography, ecology and dispersal.

The focus species are: Ctenotus atlas (the striped skink, late coloniser), Nephrurus stellatus (the starred knob-tailed gecko, early coloniser) and Amphibolurus norrisi (the mallee tree dragon, fire response varies between locations).

We aim to produce results that will have practical applications in land management while also strengthening succession theory. In particular, the findings from this study will assist land managers in optimising the spatial scales of prescribed burning projects.

Desley Speck

PhD Scholar

Climate change Politics and Policy

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Research Description

Developing climate change policy is challenging. It is clearly a global issue but both domestic and foreign policy development are intertwined. And, whilst the fourth IPCC report released in November 2007 stated warming of the climate system is unequivocal, and that it is very likely due to increased anthropogenic greenhouse gas concentrations, the media is reflecting conflicting discourses. Media coverage influences both public opinion and policy makers. The policies required to reduce greenhouse gas emissions and effect mitigation are unpalatable to mainstream voters, but if climate change is perceived as a significant threat to their lifestyles, voters may be convinced to shoulder the extra financial burden. The emerging discussion on adaptation is also relevant, but politicians perceiving strong public support will be encouraged to push for the more difficult mitigation policies. In this project some important issues and perceptions influencing the interrelationships between media coverage, public opinion, policy making, and policy implementation will be examined. A specific focus will be on perceptions of climate change as a threat, perceptions and constructions of threat, and their interaction with policy action.

Karen Stagoll

PhD Scholar

Conservation planning and management of habitat for threatened woodland birds in urban and peri-urban landscapes

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Research Description

Over half of the world population is living in urban centres, and this figure is expected to rise rapidly. As a consequence, many ecological community processes are affected, and the richness and diversity of species and assemblages in urban and peri-urban areas are changing. This poses great challenges for conservation, as the limited scope and size of protected areas and reserves necessitate the use of modified landscapes in long-term conservation.

Within the ACT, the lower Molonglo Valley is planned as the next area for major suburban development. It is a recognised 'hotspot' for woodland birds, and so development needs to occur as sustainably as possible. Ecologically sustainable urban development, however, is hampered by the inadequate understanding of how species and ecological communities respond to urbanisation. We do not know, for example, what land use or vegetation features are necessary to support viable populations, nor how best to integrate conservation into suburb design.

My project aims to answer some of these questions by investigating patterns of landscape used by woodland birds in urban and peri-urban environments. Data collected from the project will hopefully provide planners and policy-makers with sound whole-of-landscape scientific evidence on which to base planning, conservation and management policies.

Vinoli Thampapillai

PhD Scholar

Environmental Flows in the Murray Darling Basin: Market-Based Water Governance, Public Institutional and Legal Reform.

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Research Description

This research questions whether market-based water governance is capable of delivering environmental flows while ensuring improvements in social welfare (ie. efficiency) in the Murray Darling Basin. Given evidence of the limitations of market-based water governance, I explore which public institutional and legal reforms are necessary to achieve the desired goals. The research involves comparative analysis of water governance arrangements in India, Sweden, Canada and the United States.

PhD Research Areas: Water Law, Water Governance, Law and Economics (New Institutional Economics, Law and Sustainable Development), International Comparative Law, International Environmental Law.

BEc./LL.B. (ANU), LL.M (Toronto), M.A. Diplomacy and Trade (Monash)

Phil Townsend

PhD Scholar

Policy options for an internationally competitive plantation forestry sector in Australia

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Research Description

Recent expansion in the global plantation estate has been based on investment in simple plantations where management decisions ignore positive and negative production externalities. However, there is growing community interest in having plantations, and all other forms of land and resource use, switch from simple to complex production systems. Such a future transformation in Australia's plantation forestry sector will be guided by changes in domestic policy settings and the international wood markets. This thesis examines the effects of tax, water entitlements, greenhouse and salinity management policy settings on plantation investment and management decisions. An integrated analytical framework is being developed to allow a comparison of economically-efficient outcomes from individual policies with the outcomes arising from the combined multiple policy changes. The resulting analysis indicates that a policy framework which leads to the introduction of more complex production systems will affect the species planted, the silvicultural management of those species and the plantation rotation length. A justification of the discount rate(s) used in this analysis is central the assessment of outcomes from social, government and private investment perspectives.

Renee Visser

PhD Scholar

Temporal and spatial interactions of foxes, cats and dingoes in arid Australia

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Research Description

On mainland Australia the dingo (Canis lupus dingo) has been the apex predator since the extinction of the thylacine (Thylacinus cynocephalus) 4000 years ago. There has been little research, but much speculation, on the role the dingo may play in trophic regulation in Australian ecosystems. This research aims to investigate the role of dingoes in structuring ecological communities through regulation of two smaller introduced predators, the feral cat (Felis catus) and the red fox (Vulpes vulpes). Previous studies have shown an increase in the number of smaller predators (cats and foxes) when dingoes are controlled and a decrease in small to medium-sized mammalian prey species. However, this relationship or the mechanisms behind it are not clear. There is some anecdotal evidence that the behaviour of dingo populations, rather than their density or abundance, may be a determining factor. Current management strategies that target dingoes as a pest species may have a direct impact on their ability to limit cat and fox numbers. The long-term implications of this for native species are yet to be determined.

The project will explore the potential conservation value of the dingo through their ability to facilitate behavioural change in cats and foxes. It will examine the role dingo behaviour may play in limiting assess to resources in a resource poor environment. It aims to investigate behavioural interaction as a mechanism behind predator-predator and predator-prey interactions and if so, whether some current management/control measures may promote or hinder this role.

Lyndsey Vivian

PhD Scholar

Variation in fire response traits across mountainous plant communities

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Research Description

The ability to resprout and fire-stimulated seed regeneration are regarded as critical traits allowing plants to persist in fire-prone ecosystems. The proportion of species with particular traits varies across a landscape, however the extent to which this variation is determined by the fire regime is unclear. My research is an investigation of variation in fire response traits in plant communities across the Australian Alps region, and the relative importance of the fire regime in driving this variation. Results show that rocky outcrops, water availability, temperature and the number of short inter-fire intervals are correlated with the proportions of resprouters and seeders. Therefore fire is only one factor amongst many in determining where different species dominate in a plant community. The next stage of my research is an investigation of the relationships between fire-response traits and other leaf and whole-plant traits. This analysis aims to provide a clearer understanding of the mechanisms driving patterns of resprouters and seeders in my study area. My research will provide fundamental ecological knowledge of how environmental gradients and fire interact to influence where different types of species occur in a landscape; knowledge which will also be invaluable in fire and land management.

Robert Waterworth

PhD Scholar

Dynamics of stem growth and form in Pinus radiata (D.Don) under contrasting water and Nitrogen availability.

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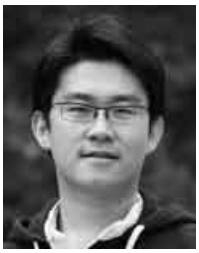
Research Description

The way trees grow, and in the process distribute and store carbon in the stemwood, is related to site and climatic conditions. This research aims to determine how the stem profile of Pinus radiata varies with differences in growing conditions. This will provide a better understanding of the relationships between stem development, stem volume increment and environment.

The research is based on historical data and recently collected samples from CSIRO's Biology of Forest Growth experiment, a long-term research trial terminated by the 2003 Canberra bushfires. The trial consisted of combinations of irrigated and fertilised treatments, representing a diverse range of growing conditions. The main phase of the research involves full stem analysis of sample trees to determine the stem volumes and changes in stem form between the treatments.

The research is being carried out with assistance from CSIRO. Funding from the former CRC for Greenhouse Accounting is gratefully acknowledged.

Lin Wang



PhD Scholar

GIS based environmental archaeology study in northern China

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Research Description

A GIS based spatial analysis will be conducted to examine the correlation between cultural change and climatic fluctuation during the Chinese Holocene. Affected by the East Asian monsoon system, different regions of China have different patterns of climate change and different agroclimatic conditions. In response to different natural environments, ancient people adopted regionally different subsistence strategies. The aim of this study is to explore these regional differences from the spatial point of view and examine the cultural response to climate change especially under different subsistence strategies. Effective paleoclimate indicators will be used to compare cultural scale with land use ratio over different periods of time. Considering the unique geographical position and different tradition of subsistence strategy, three typical areas will be selected for a comparative study. Different responses to climate change will provide a possible understanding of ancient man-land relationship and an explanation of the continuity of Chinese civilization. Furthermore, this study aims to provide some evidence on the transformation of subsistence strategy from a spatial point of view and contribute to the understanding of ancient vegetation surroundings in different regions of northern China.

To make effective use of the survey data and to link climatic information with archaeological data quantitatively, a series of methods will be used involving site catchment analysis, spatial cluster analysis and population size evaluation. Based on spatial analysis, possible ecological indicators will be derived from the survey data and a final comparison study with the environmental indices, especially vegetation indicators, will be conducted.

Martin Westgate

PhD Scholar

Landscape Ecology of Amphibians in Booderee National Park, Jervis Bay

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Research Description

This project is part of a larger, long-term study of the fauna of Booderee National Park, in Jervis Bay on the NSW South Coast. My aim is to quantify the range of habitats used by amphibians, and provide information on poorly understood aspects of frog behaviour. To address this I have conducted surveys of both terrestrial and aquatic habitats, and am attempting to quantify movements between breeding sites and the wider landscape. The study is complicated by poor detectibility rates when surveying for frogs, due to their complex life cycles, behaviour and physiology. A range of survey methods and statistic techniques are being applied to resolve these issues. Understanding of each species' behaviour will assist in management of habitats for the conservation of frog species given the potential impacts of altered fire regimes and climate change.

Kirien Whan

PhD Scholar

Interactions between large-scale modes of climate and the climate of SE Australia

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Research Description

Understanding climate variability and climate change is crucial for the economically important region of south-east (SE) Australia. Several major ocean-atmosphere interactions have associations with climate in SE Australia, such as El Niño-Southern Oscillation, the Inter-decadal Pacific Oscillation, the Indian Ocean Dipole and the Southern Annular Mode. Previous research focused on how these drivers affect climate in SE Australia, with limited research into how they interact. This project will concentrate on understanding the relationships between these drivers of climate, in both the current and future climate regimes.

Classification and regression trees are a relatively recent statistical technique making exploration of nonlinear climate processes possible. There is considerable potential in the use of this methodology for examining the relationships between large-scale modes of climate and the associations between these drivers and climate variables. Analysis of relationships among large-scale climate drivers during the observational record will provide the foundation for research into climate model simulation of these relationships in the 20th and 21st centuries.

A better understanding of the nonlinear associations between large-scale influences on climate variables will enable greater weight to be given to climate models whose predictions have a sound physical basis. If the physical processes (linear and nonlinear) that drive climate in South East Australia can be better understood then examination of how models are reproducing these relationships can be used to reduce model uncertainty. The IPCC AR4 models that best simulate the observed relationships among large-scale modes and between large-scale modes and climate variables on seasonal, interannual and annual timescales will be identified.

The stability of the relationships between the drivers will be assessed in future climate projections. This analysis will examine if and how the interactions between the drivers of climate in SE Australia may alter under climate change, thereby reducing the uncertainty associated with climate projections for the 21st century.

Martin Worthy

PhD Scholar

Major water quality degrading events in the Cotter River catchment: characteristics and management in a probabilistic landscape.

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Research Description

The role of fire in Australian ecosystems has long been recognised as an integral part of many ecosystems evolution and function. Increasingly fire and its relationship with soil erosion is raising significant concern amongst scientists and managers. Rainfall on bare soil leads to a host of issues resulting from erosion. This includes water quality problems, fluvial form change and degradation or loss of various ecosystem services and functions.

Following the fires of 2003 localised erosive rainfall events fell on parts of the Cotter River catchment within the Australian Capital Territory. The rainfall resulted in large quantities of material eroding from material stores and redistributing the material downslope into the Cotter River, then transported further downstream to water supply reservoirs.

This single concatenation of events led to the largest export of sediment and associated material from this landscape in historical times. Little is known regarding the history, event probability or behaviour of soil erosion events following fire. This study aims to address this issue by studying the history of fire and erosion using the sedimentary sequences of the Cotter River. Attention is also paid to the events of 2003, the systems response and behaviour following fire.

Kara Nicole Youngentob

PhD scholar

Investigating the Effects of Landscape Context and Foliage Chemistry on the Distribution and Abundance of Arboreal Marsupials near Tumut, NSW

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Research Description

Tumut is the location of a large scale, ecological study initiated by David Lindenmayer and Ross Cunningham in 1995 to explore the effects of habitat fragmentation and landscape context on animal populations (more information can be found at: http://fennerschool-research.anu.edu.au/cle/tumutstudy/index.php). As part of this project, we will collect new presence and abundance data on arboreal marsupials to use in conjunction with previous data to investigate the effects of habitat fragmentation on these animal populations over time and in a changing, forestry managed landscape.

Previous research has indicated that animal populations are not evenly distributed across landscapes, even in continuous, unfragmented habitat that appears mostly homogenous in terms of plant species composition and density of cover. The second objective of this research is to explore whether natural variations in foliage nutrient availability and herbivore deterring plant secondary metabolites relate to observed patterns of arboreal marsupial abundance. We plan to measure and map levels of nitrogen, condensed tannins and total polyphenols across our site using HyMap hyperspectral remote sensing. We will identify the best predictors/models for explaining the distribution of arboreal marsupials at our site based on patterns of these forage qualities, the presence of potential competitors and physical site characteristics. More information on this project can be found at: http://www.hermonslade.org.au/projects/HSF_06_11/hsf_06_11.html.

Geoff Buchanan

Master of Geographical Sciences Scholar

Harvest studies in hybrid economies: Exploring the socioeconomics of customary use of wildlife by Indigenous Australians

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Research Description

My Masters coursework concentrated on community economies and participatory resource management. My Masters research has followed on from this, focusing on socioeconomic aspects of the customary use and management of wildlife—in particular, dugong and marine turtles—by Indigenous Australians. My research seeks to reveal something of the socioeconomic context within which customary use of wildlife takes place as well as the economic benefits communities derive from this use. Indigenous harvest of wildlife in Australia is seen to take place within hybrid economies (Altman 2005) where livelihoods are generated in the intersecting segments of the customary, state, and market sectors. Mainstream measures reveal little, if anything, of customary economic activity by Indigenous Australians—activity that provides local, regional and national benefits. With linkages to work being conducted as part of the Centre for Aboriginal Economic Policy Research's People on Country project, this Masters research aims to: (i) contribute to the evidence base on the socioeconomic context and economic value of customary use of wildlife; and (ii) support evidence-based policy innovation, particularly in relation to economic development and natural resource management on the Indigenous estate.

Mark Jones

Master of Forestry Scholar

Dry sclerophyll forest utilisation at Landtasia, a property in the southern tablelands of New South Wales

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Research Description

Landtasia is a 4200ha property on the southern tablelands of New South Wales. Land managers at Landtasia aim to maintain environmental, social and economic viability of farming operations mainly through organic food production (beef, apples, wine and honey) and, in the future, through on-farm tourism. Other potential industries of interest include farm forestry, carbon sequestration, bush foods, native seed harvesting (for revegetation market) and cut flowers.

Rationale for forest research:
There is a large (in excess of 1000 ha) native forest estate at Landtasia. Understanding this forest resource will become increasingly important in planning for the on-going viability of farm operations, particularly with the move toward year-round honey production. Forest resources also present a number of opportunities for future gains through eco-tourism, farm forestry, bush foods and native seed collection. However, to date, there has been little research or resource mapping completed on species composition, structure and productive potential of the different forest types on farm.

Proposed research project:
Proposed research project to include the mapping of the different forest types located on the farm, their productive potential (including a geological and soil resources survey) as well as an outline of options for sustainable forest management and utilisation of those forests.

Helen King

Master of Environmental Science Scholar

Current and emerging challenges in farming practices and climate change policies

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Research Description

Sustainable farming practices have potential to contribute to mitigation of climate change through reduced emissions and carbon sequestration in vegetation and soils, and adaptation through rebuilding resilience of natural systems. The research examines the biophysical, policy, and economic factors and how they are contributing to environmental outcomes.

Sandra Lauer

Master of Geographical Sciences Scholar

E: sandra.lauer@anu.edu.au

Research Description

I completed my undergraduate studies (Bachelor of Arts/Economics) at ANU in 1994, with a major in geography, a major in microeconomics and a minor in political science. Since then I have worked in various jobs across a diverse range of sectors including: retail, rural management, administration, education and small business. Currently I am working as a web and multimedia designer.

I enrolled in postgraduate studies at the Fenner School to improve my knowledge of current environmental and sustainability issues and to expand on what I had learnt whilst studying geography as an undergraduate student.

My areas of interest include the greening of small business through improved education and community participation, and how New Media technologies might be used to enhance social learning within local communities, with regard to environmental and sustainability issues.

Yuki Shiga

Master of Geographical Sciences Scholar
Aeolian Dust in Australia

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Research Description

Aeolian dust has a significant impact in various areas, including soil-landscape formation, global climate change and human societies. Thus it has serious implications for health and the economy. Considering the poor nutritional condition of Australian soils, the loss of nutrients from soil has severe consequences for society. Furthermore, salinity and sodicity are major issues in the Australian landscape which have serious impacts not only on industries such as, agriculture and pastoralism, but also on the biodiversity of the environment. Aeolian dust is thought to be partially responsible for the cause of the aforementioned issues – it is assumed to be an insidious carrier of terrestrial salts which when deposited induce salinisation and/or sodification in the landscape. However, this proposition is still controversial due to the insufficient amount of past research that has been done in an Australian context. Therefore, the purpose of my research is to contribute to research in this area of aeolian dust.

My research will be focusing on understanding the chemical and physical patterns, both spatial and temporal, of dust aerosol transportation, and the functions of the dust particles within the Australian continent with special considerations on salt.

Elaine Springgay

Master of Forestry Scholar

National Forestry Masters Program

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Research Description

I completed my undergraduate degree at the University of Toronto with a double major in Physical and Environmental Geography and History. This interdisciplinary background sparked an interest in the interactions of humans and forests, in particular forest resources. I came to ANU to enhance my knowledge and skills in sustainable forest management and policy.

Currently, I am focusing on the incentives and potential of community-based sustainable forest management to prevent tropical deforestation and the implications of implementing these sustainable alternatives. My analysis includes the environmental, social and economic incentives and implications; these include: the effectiveness of mitigating environmental degradation; the impacts on social dynamics and equity; the development of market dependencies; and the improvement of social capacity, including land tenure and local knowledge.

Nick Streeton

Master of Environment Scholar

Water Science

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Research Description

An evaluation of the capability of the holistic restoration technique Natural Sequence Farming to improve the condition of an incised swampy meadow and associated floodplain areas, and the generation of a sediment budget, for a small semi-arid catchment in south eastern Australia.

Purdey Wong

Master of Resources, Environment and Society Scholar

Decision making on the farm: natural resource management in practice – or not?

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Research Description

Research on the influence of media on agricultural decisions is evaluated for effectiveness and efficiency in promoting natural resource management. Decisions made on the farm are dependent on a range of personal, social, cultural, environmental and economic factors. The research project explores these factors and considers how and why NRM farming decisions are made.

Angelika Erpic

Graduate Diploma Scholar

Environment

E: u4496384@anu.edu.au

Research Description

I completed my undergraduate studies (Bachelor of Applied Science) at UTS in 1972, with a major in microbiology and a minor in biochemistry. I also completed a Graduate Diploma in secondary science teaching in 1990. I have enjoyed employment in numerous fields including as a: biomedical scientist in public hospital and private pathology laboratories; chemistry/biochemistry tutor at UC; teacher of secondary science in the ACT; manager of a science education centre; and currently, as a public servant in the Indigenous education area.

I enrolled in postgraduate studies at the Fenner School to formalise my strong interest in environmental science and to develop some background in order to pursue work in a research field perhaps as my "last Hurrah" in the workforce.

My areas of interest include: the nexus between the environment, traditional ecological knowledge, education/employment and Indigenous issues in Australia; strategies for increasing land under conservation in Australia; and societal and individual responsibility (particularly in the developed world) for resolving the significant environmental issues we face.

Nicola Glendining

Graduate Diploma Scholar

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Research Description

Research Project modelling management interventions in the Lower Snowy River.

Decision Support System for Dairy Australia

Linda Morthorpe

Graduate Certificate in Environment Scholar

Greenhouse Science & Ecological Measurement and Modelling

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Research Description

Exploration of research on species composition and structure of Borneo's lowland forests: including the effects of logging and forest degradation on fauna survival.

Rohan Burgess

Concurrent Honours Scholar

Forestry – thesis is looking at management of dry sclerophyll forests
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Research Description

My thesis is looking at assessing the effects of a variety of different silvicultural treatments on regrowth dry sclerophyll forests on a property near Bungendore, NSW. In particular I was investigating the effects that the treatments, that were applied 15 years ago, had on the forests overstorey, midstorey and understorey, in terms of the growth of the overstorey, the cover in mid and understorey and species diversity (number of species, number of individuals and number of life forms) of the mid and understorey.

Joseph Guillaume

Honours Scholar

Accounting for personal preferences in cycling route planners
E: joseph.guillaume@anu.edu.au

Research Description

Developing a survey suitable for use in web-based route planners that can capture personal preferences, so that more personally-suited routes can be recommended than simply the shortest or cheapest. The method is intended to give results that are directly usable in GIS applications and that can also be used for transport planning purposes.

Julie Kennett

Honours Scholar

Environmental and management factors controlling the abundance and dominance of the native shrub species *Kunzea parvifolia*
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Research Description

Kunzea parvifolia is a native shrub of the Myrtaceae family; small to medium in size with very small leaves, and a cluster head of pink to purple flowers during spring. It produces prolific amounts of seed that are wind dispersed, or transported by water along drainage lines, and has an extensive root system of lignotubers, which allows it to recover well from disturbance events such as fire, slashing and grazing. It generally grows in heath form, or sparsely as an understorey species in dry sclerophyll forests. In the Braidwood area of NSW, K. parvifolia occurs over extensive areas of the region, predominantly on the poorer soil types, and in areas that have undergone significant landscape modification, in particular the removal of overstorey trees. It is in these disturbed landscapes that K. parvifolia has established and grown into dense thickets, or monocultures, and where landholders have expressed a growing concern at its spread and its development as a potentially invasive species. The aims of this research project are to identify environmental factors, and management practices driving the development of K. parvifolia within this study area.

Charles Lowson

Honours Scholar

Estimating Carbon in Direct Seeded Environmental Plantings
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Research Description

Carbon sequestration by direct seeded vegetation is not well understood. Yet this method of revegetation is increasingly being used around Australia, and has the potential to be counted as a Kyoto compliant forest. My research, therefore, aims to determine the best method available, given the projects time and resource constraints, to measure the carbon mass within direct seeded environmental plantings across the Southern Tablelands. Site carbon mass will be estimated using a range of allometrics and by FullCAM, the NCAS carbon accounting model. Further to estimating site carbon, it has been hypothesised that unique site factors – such as whether the planting has been grazed –can affect the carbon sequestered on a site. Ascertaining how these effects influence carbon sequestration is an additional goal of this research.

Tessa McDonald

Honours Scholar

Temporal experience and behaviour
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Research Description

Lack of time has emerged as an issue for many living Western, urban lifestyles. Time pressure is implicated in poor health and is a barrier to sustainable behaviours like choosing active transport over the car.

This investigation focuses on links between experience of time and how we structure daily activity, through the case study of commuting (trips between work and home). Interviews were conducted with employees from a Federal Government Department in Canberra, focussing on commuting within the context of everyday life.

This study found that commuting is seen as necessary but undesirable for most. However some people enjoy or value their commuting time due its qualities (e.g. relaxing) or values they see it providing (e.g. exercise, family time). Also, some people extend their commuting time in order to maximise these benefits.

A conceptual model with three temporal dimensions – context, experience, and conceptualisation - is put forward to explain how activity is structured.

Zoe Read

Honours

The Effects of Direct Seeded Vegetation Belts on Soil Function across the Southern Tablelands of New South Wales
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Research Description

There has been a concerted effort in recent years by NGOs, rural landholders and others to revegetate the Australian landscape in an attempt to mitigate against soil loss, erosion, and dryland salinity. One way this has been achieved has been with the establishment of directly drilled vegetation belts placed in strategic positions on farms.

This research project aims to determine how the vegetation belts are modifying soil function by comparing the physical, chemical and biological characteristics of the soils within the vegetation belts with those of adjoining grasslands and representative analogue sites. The landscape function analysis model has also been used to determine whether the vegetation belts are changing the stability, infiltration and nutrient cycling functions of the landscape.

The research is being carried out with support and financial assistance from Greening Australia.

Kim Williamson

Honours Scholar

Human Ecology
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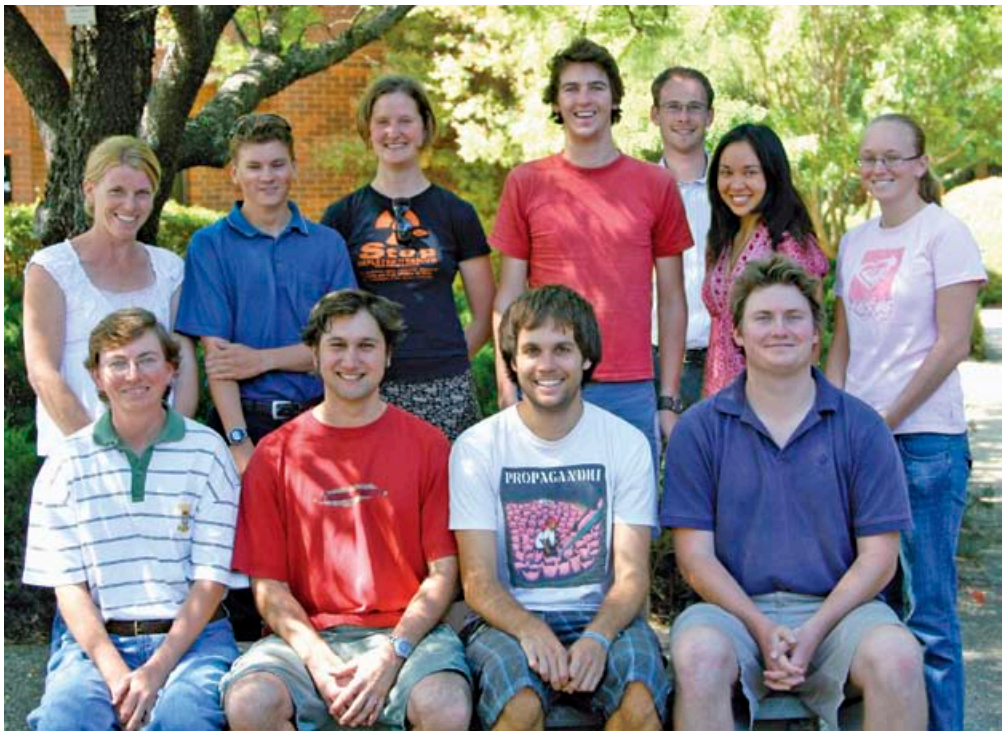
Research Description

Kim has been researching sustainability and resilience in international disaster response, with 3 months fieldwork in Indonesia. Her research takes a methodologically pluralist, integrative approach, drawing on disaster policy and institutions, systems thinking, sustainability and resilience thinking, universals and globalisation, anthropological and development studies discourses of community participation, epistemic communities and narrative policy analysis. Research blogging was an important part of the research process in order to create a space in which both academics and disasters workers engaged in debate. The research interrogates the conceptual foundations of humanitarianism, with regards to the environmental and social aspects of sustainability, and proposes resilience thinking as an integrative framework for interpreting the humanitarian ethic. It illustrates this through a case study of the humanitarian shelter response to the Jogyakarta earthquake in May 2006.

Honours Scholars - semester 1, 2008



Back: Julie Kennett, Rohan Burgess, Tessa McDonald, Bart Schneermann, Stefan Kraus, Kim Williamson, Tegan Liston
Front: Zoe Read, Charles Lowson, Mark Vicol, Joe Henry



DECEMBER 2007, JUNE 2008, DECEMBER 2008

PhD and MPhil GRADUANDS

Ross Brodie
Conjunctive Water Management in the Lower Richmond Catchment

Matthew Brookhouse
Dendrochronological rennaissance of eucalypts in southeast Australia

Melissa Burgess
Spatiotemporal Patterns of Avoidance in Kings Cross: An Exploration of the Environmental Cues that Trigger Fear of Crime

Paul Carlile
A Semi-Distributed Catchment Hydrology Model for Simulation of Landuse Change, Streamflow and Groundwater Recharge

Prachi Dixon-Jain
Groundwater-Surface Water Interactions: Implications for Nutrient Transport to Tropical Rivers

Steven Douglas
Are 'greened' religions the answer to the ecological crisis?

Suzanne Feary
Chainsaw Dreaming: Indigenous Australians and the Forest Sector

Jennifer Drysdale
Sustainable Development or Resource Cursed? An Exploration of Timor-Leste's Institutional Choices

Adam Felton
Avian Biodiversity and Reduced Impact Logging: Bird Assemblages, Forest Structure and Anthropogenic Disturbance in a Reduced-Impact Logged Bolivan Forestry Concession

Annika Felton
The Nutritional Ecology of Spider Monkeys (Ateles Chamek) in the Context of Reduced-Impact Logging

Takahisa Furuichi
Soil Erosion and Sedimentation in the Lake Inle Catchment, Myanmar (Burma)

Martin Golman
Resource planning for Samsai Nikek tribal forests og Papua New Guine - recognising land, people and the forests

Simon Gordon
Deliberating with Leviathan: Addressing Complex Ecological Problems in the Administrative State

Adam Leavesley
The response of birds to the fire regimes of central Australia mulga woodlands

Alex Lee
Utilising airborne scanning laser (LiDAR) to improve the estimation of Australian forest structure and biomass

Geraldine Li
Investigating Individual and Social Level Risk Adaptation in Human-Natural Systems

Kirsten Maclean
Creating Spaces for Negotiation at the Environmental Management and Community Development Interface in Australia

Stephanus Mandagi
Seaweed Farming in Indonesia: Lessons for Sustainable Coastal Management for North Sulawesi

Philip Pagan
Evaluation of Institutions for Interstate Water Trading Involving the ACT

Daju Resosudarmo
Between Development, People, and Forests: local government decision making under decentralisation. Case study of two districts in Kalimantan, Indonesia

Jacqueline Russell
Human Ecology: A Proposal for a Critical Systems Approach for a Conceptual Framework

Debra Saunders
Ecology and conservation of the endangered, migratory Swift Parrot




PhD and MPhil GRADUANDS continued

Kate Sherren
Sustainability bound? A study of interdisciplinarity in universities

Celina Smith
Assessing Variability and Uncertainty Associated with Suspended Sediment Contributions from Catchments: Implications for Management

Janet Stein
A Continental Landscape Framework for Systematic Conservation Planning for Australian Rivers and Streams

Emma Tiller
A Systems Approach to Understanding the Dynamics of Crop Pest Control Systems & the Natural Pest Control Service

Thi Thu Ha Tran
The Impacts of the Doi Moi Process on Communities and Forest Land Management in the Northern Mountainous Region of Vietnam

Jessica Weir
Cultural flows: negotiating water with traditional ownersw from along the Murray River

Wendy Denise Welsh
Groundwater Balance Modelling with Darcy's Law

Vanessa Wong
The Effects of Salinity and Sodicity on Soil Organic Carbon Stocks and Fluxes

MASTERS GRADUANDS

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Robert Langford

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Kim Marchiori

Aru Mathias

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Ni Putu Diana Mahayani

Margaret Ouma

Omar Pidani

Yuki Shiga

GRADUATE CERTIFICATE GRADUANDS

Edward Ratcliffe

Vivien de remy de Courcelles

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Storm over Canberra photo: Charles Tambiah

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