THE FENNER SCHOOL OF ENVIRONMENT & SOCIETY

THE AUSTRALIAN NATIONAL UNIVERSITY

YEARBOOK 2007

ANU COLLEGE OF SCIENCE

http://fennerschool.anu.edu.au

The Fenner School of Environment and Society
Yearbook 2007

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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 image was taken by Clive Hilliker during a field trip for 'Australia's Environment' (SRES1004) - a hands on course introducing students to the origins and evolution of Australia's landscapes, as a basis for understanding the current state of Australia's environment. Alice Taylor, Chris McElhinny, Sophie Linehan and William Macleod discuss eucalypt species patterns.

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

Yearbook Production Team: Clive Hilliker
Debbie Claridge, Steve Leahy, Janette Lindesay

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It is a pleasure to present the 2007 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 transdisciplinary research and education on complex environment-society systems.

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

This inaugural 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.

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 2006, Fenner School staff maintained their exemplary publications record which includes books, book chapters and journal papers. The teaching and learning programs continued to evolve, and to be recognised for their quality and innovation. Our Teaching staff won 4 prestigious National Teaching Awards and 2 ANU Teaching Awards.

In 2007, the Fenner School initiated a new sustainability study, operating across all four themes and using the Canberra region as its laboratory.

A large and vigorous research training program at the PhD level remains central to Fenner School activities. We are rapidly developing a university-wide Master of Environment framework for postgraduate coursework and at the undergraduate level, the School offers BA, BSc, B Interdisciplinary 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 Will Steffen
Director

Professor Peter Kanowski
Deputy Director

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FOR FURTHER INFORMATION

Prospective undergraduate students

ANU

• ANU *Studyat* website	**info.anu.edu.au/studyat**
• ANU Undergraduate Handbook	**www.anu.edu.au/sas/handbook**
• ANU Undergraduate Student Guide	**info.anu.edu.au/studyat/_Student_Recruitment/_publications.asp**

ANU College of Science and ANU College of Arts and Social Sciences

• ANU College of Science website	**cos.anu.edu.au**
• ANU College of Science Program Guide	**info.anu.edu.au/studyat/_Student_Recruitment/_publications.asp**
• ANU College of Arts and Social Sciences website	**cass.anu.edu.au**
• Faculty of Arts and Social Sciences Program Guide	**info.anu.edu.au/studyat/_Student_Recruitment/_publications.asp**

The Fenner School of Environment and Society

• The Fenner School	**fennerschool.anu.edu.au**
• Undergraduate and Honours Handbooks	**fennerschool.anu.edu.au/studying/prinfo**
• Program fact sheets (Forestry, Geography, Human Ecology, Resource & Environmental Management, and Sustainability)	**fennerschool.anu.edu.au/studying/prinfo**

Prospective graduate students

• ANU *Studyat* website	**info.anu.edu.au/studyat**
• ANU Graduate Coursework Guide	**info.anu.edu.au/StudyAt/050PP_Graduate_Coursework/index.asp**
• ANU Graduate Studies in Environment (including Resource Management)	**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**
• The Fenner School of Environment and Society	**fennerschool.anu.edu.au**
• The Fenner School Graduate Programs Handbook	**fennerschool.anu.edu.au/studying/prinfo/**

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

The Fenner School 2007

The Fenner School, founded at the end of February 2007 as a joint venture of the former Centre for Resource and Environmental Studies (CRES) and School of Resources, Environment and Society (SRES), is a world-class, nationally-distinctive unit at ANU for transdisciplinary research and education on complex environment-society problems. Our work is guided by the vision of 'ANU by 2010' and is strongly connected to many other areas of ANU and to the public and private sectors. The first six months of the School's existence were exceptionally productive, as we made significant progress on a number of fronts to achieve a more effective research and teaching program to address many of the most pressing problems facing Australian and global society today.

Our combined research program continues to perform at a high level, with a strong increase in the number of publications from 2005 to 2006. We have also achieved a much higher level of coherence in the research effort, with the adoption of a four-theme structure – Integrative Theory, Methods and Application; Global Change; Landscapes, Water and Biodiversity; and People in Environments. Each of these themes is interdisciplinary in character, and the research is driven by problems and issues rather than by disciplinary interests.

A major advance over the past year has been the alignment of the School's research and teaching around the same four themes, giving effect to the ANU motto that '…we teach what we research and we research what we teach'.

In addition to the themes, the School as a whole is working together on the Canberra Sustainability Study. This project, using our home city and its surrounds as a laboratory, aims to achieve a deeper understanding of sustainability issues and to apply new knowledge, developed in collaboration with stakeholders, to real-world problems. Over the past year a number of individual projects contributing to the Study have been initiated and the first steps towards building an integrative framework have been achieved.

The Fenner School continues to play a strong role in the cross-campus work of the ANU Institute for Environment (ANUIE). The ANUIE has rapidly ramped up its activities over the past 18 months, with the launch of initiatives in Water and in Climate Adaptation. Fenner School staff have contributed significantly to the Water Initiative, whose work in education has translated into a Water major within the School's Bachelor of Integrated Studies (Sustainability) (BIS(s)) degree. Fenner School researchers also co-chair the emerging Climate Initiative, and are spearheading the development of a cross-campus Biodiversity Initiative.

In addition to the new water major mentioned above, the BIS(S) degree now also includes a major in environmental policy, and a new major in urban studies is under development. Fenner School staff are widely recognised for the excellence of their teaching, having received four Carrick awards, a Vice-Chancellor's Teaching Award, and a Science Teaching Award over the past 12-18 months. Fenner staff also play leading roles in the University's new flexible learning initiative. Given the interdisciplinary nature of its work, Fenner School staff are in demand across the University, teaching into courses in four of the seven colleges.

A major new initiative is the Master of Environment program, which aims to build a framework around which expertise from across ANU can be assembled to deliver innovative coursework packages contemporary society-environment issues. The School also takes a lead role in the implementation of the National Forestry Masters Program.

At the local level, the Fenner School works closely with ANUgreen on a wide range of sustainability issues. These range from co-supervision of PhD students working on practical aspects of sustainability to energy audits to improve the School's performance and reduce its carbon footprint. Through the partnership with ANUgreen, the School is working towards carbon neutrality, aiming to reduce its water consumption, and contributing to the creation of a Sustainability Learning Community at ANU. Over the past year, we have launched a building strategy to create a co-located, environmentally sound built infrastructure to support interdisciplinary scholarship and teaching. Potential locations and co-funding links, particularly with the ACT and Australian Governments, offer creative opportunities to showcase ANU local and national leadership.

At the international level, the School contributes strongly to the activities of the International Alliance of Research Universities. Our researchers are helping to develop the research agenda for the Energy, Resources and Environment theme, and are building the first ANU contribution to the Global Summer School Program of IARU.

In terms of outreach and engagement, the School is moving quickly and decisively to position ANU as a national leader in climate adaptation, biodiversity conservation, water system management, urban sustainability and other key areas of environmental research and education. Fenner School researchers are strongly engaging with key individuals and organizations in the public and private sectors, making presentations in their areas of expertise to a wide range of audiences, and facilitating national-level collaboration amongst research institutions on key environmental problems. Activities in all of these areas have experienced a sharp increase in the past year.

The external income of the Fenner School is strong and growing rapidly, having doubled since 2004. Most of our growth has been in non-ARC funding, reflecting the School's engagement with a wide range of stakeholders and our involvement with environment-society problems of considerable importance and urgency. In concert with a University-wide advancement program, the School is developing a program to attract significant new resources from the foundation and bequest sectors.

In summary, in less than a year, the new Fenner School of Environment and Society has moved vigorously to build an innovative, integrated research and education program of the highest standard addressing the country's most pressing environmental issues. With the environment high on the political and societal agenda, ANU has a superb opportunity to enhance its profile and impact as Australia's national university via the Fenner School and the ANU Institute for Environment.

Professor Will Steffen, Director

Fenner School International Lunch
Each year our international students prepare a huge banquet to the delight of all Fenner School staff and students

Singapore student visit
Dr Cris Brack 'challenged' a group of Singapore students with his Environment and Society Research Methods (SRES1003) field practical. It includes an animal scat survey and counting exercise.

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

Yearbook cover
Fenner School staff and students undertake the extremely difficult task of choosing a yearbook cover that best represents the highly diverse range of interests covered in The Fenner School.

RESEARCH AWARDS

Dr Sara Beavis
Banksia Team award 'City to Soil' in partnership with NSW Environment and Conservation

Emeritus Professor Valerie A. Brown AO
Shared in Banksia Award for contribution to Hargroves K. C. and Smith M. (Eds) The Natural Advantage of Nations Earthscan, London

Ms Katherine Daniell
South Australian Young Achiever Award-SA Water Environment Award

Dr Joern Fischer
Nominated by the ARC as one of the most innovative Discovery Grants in ACT

Dr Rebecca Letcher
Award for Excellence in Stormwater Software Development at the 2007 from the Stormwater Industry Association for the HICAM software (Hornsby Integrated Catchment Assessment and Management, joint award with Hornsby Shire Council and Cardno Willing)

Professor David Lindenmayer
Banksia Award-Daimler Chrysler Environmental Award
Whitely Award for textbook Practical Conserving Biology
Honorary Adjunct Professor at University of Melbourne

Dr Ben Macdonald
The Australian Soil Scientist Publishing Award
Bureau of Rural Science and Innovation Award for Young People in Agriculture, Fisheries and Forestry (ACT)

Dr Colin Matheson
2006 Commonwealth Forestry Association Regional Medal of Excellence, Southeast Asia and the Pacific for 'Outstanding service in the field of Forest Genetics'

Dr Wendy Merritt, Professor Tony Jakeman and Dr Barry Croke received the G. Burton medal by the Hydrological Society of Canberra for the best Hydrology publication by a Canberra-based author

Dr Lachlan Newham
Lachlan was awarded 'Early Career Research Excellence' by the Modelling and Simulation Society of Australia and New Zealand

Professor Pat Troy
Honorary Doctorates from Griffith University(Qld) and Melbourne University

Dr Hugh Tyndale-Biscoe
Whitely Medal of the Royal Zoological Society of NSW awarded 'Best Book on Australian Marsupials' in 2005. In 2006 '*Life of Marsupials*' was included in the selection of outstanding texts by the New York based magazine Choice

Ms Celina Smith
Student award for paper and presentation at MODSIM 2005

Ms Kara Youngentob
Awarded best student poster/presentation at 2006 Photogammetry Conference in Canberra

TEACHING AND SUPERVISION AWARDS

Associate Professor Richard Baker
Carrick Institute 2006 Award for Australian University Teaching

Dr Cris Brack
ANU Vice-Chancellor's 2006 Award for Excellence in Teaching and in Research Supervision

Associate Professor Dr Janette Lindesay
Dean of the ANU College of Science 2006 Award for Excellence in Teaching

Dr Robert Dyball, Associate Professor Richard Baker and Dr Cris Brack. Each won a 2007 national Carrick Citation for Outstanding Contributions to Student Learning.

AWARDS WON BY OUR UNDERGRADUATE & HONOURS STUDENTS

ACTION Trust Scholarships
Paul Bonato, Hannah Hueneke, Simeon Hui, Heather Mason jointly with Robyn Sakkara

Australian Institute of Agricultural Science and Technology Prize
Heather Mason

Environmental Institute of Australia and New Zealand Prize
Anneliese Kunz

Howlett Honours Prize in Geography
Rachel Bessell

Jacobs Medal for Outstanding Field Studies in Forestry
Geoffrey Kay

M. R. Jacobs Prize in Silviculture
Matthew Kinny

Schlich Memorial Trust Prize
Benjamin Wielinga

State Forests of NSW Prize for Forest Mensuration
Paul Killey

W. P. Packard Prize in Geography
Bronwyn Anderson-Smith

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. Integrative theory, methods and applications

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

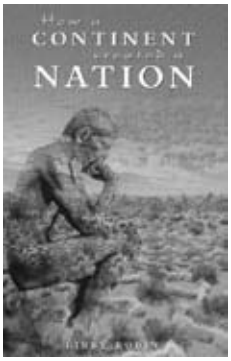
ANU WildCountry Research and Policy Hub

The ANU WildCountry Research and Policy Hub is a new academic initiative for advancing knowledge and innovative approaches to long term and large scale conservation planning and policy. The Hub is designed to build upon existing research activities, promote linkages both within interested areas of ANU and among a growing body of external collaborators, and facilitate the transfer and application of scientific research and development outcomes to the community of conservation stakeholders. Current R&D collaborators include The Wilderness Society, Rio Tinto Weipa, Bush Heritage Australia, Environment Australia, The Australia Museum, and the N.T. Department of Natural Resources, Environment and the Arts.

Conservation and Landscape Ecology

Professor David Lindenmayer and his colleagues in the Conservation and Landscape Ecology Group have established and maintained six large-scale research programs on biodiversity conservation and natural resource management in south-eastern Australia spanning forests, plantations, woodlands, national parks and reserves 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. David is pictured here with fellow researchers in Booderee National Park at Jervis Bay (NSW). The ongoing Jervis Bay Fire Response Study is examining the impacts of fire on mammals, birds and reptiles inhabiting a range of vegetation types.

Image: David Lindenmayer and research officers (from left to right): Lachie McBurney, Professor David Lindenmayer, Chris MacGregor, Darren Brown, Damian Michael, Rebecca Montague-Drake, Mason Crane)



Environmental History

Environmental History is a growing area for publishing. Dr Libby Robin's book, *How a Continent Created a Nation* (UNSW Press, 2007) is joined by books from recent Fenner PhD graduates, Dr Daniel Connell *Water Politics in the Murray Darling Basin* (Federation Press, 2007) and Dr George Main *Heartland: The Regeneration of Rural Plac*e (UNSW Press, 2005).

Environmental history is study of the transformation of the natural world by human action and the consequences for both nature and people. Nature is an actor in this history. It aims at a synthesis, although the weighting given to human or natural agency varies considerably between inquiries. It overlaps many areas of the humanities, the sciences and the social sciences and draws on archaeology, forestry, geography, history and science. The Fenner School is home to the Australian and New Zealand Environmental History Network and web-page: http://cres.anu.edu.au/environhist/index.php

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 conservaion 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.

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

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.

Students visit the ANUgreen HotRot In-Vessel Composting System while planning a project to analyse environmental benefits of the project

The ANU Integrating Sustainability Project

The ANU Integrating Sustainability Project (ANU ISP) represents a collaboration between the Fenner School of Environment and Society and the university's corporate environmental management division, ANUgreen. The project aims to foster interest in sustainability throughout the disciplines with a particular focus on linking curriculum to campus sustainability initiatives. Our action research focuses on a 'whole-of-university' approach to sustainability which explicitly links research, educational, operational and outreach activities and engages students in each of these aspects rather than confining their education solely to the classroom. The ANU ISP allows students across a number of disciplines to conduct research into ANUgreen campus sustainability initiatives. This very successful collaboration has had far reaching effects at ANU including raising the profile of University sustainability initiatives, providing solutions to sustainability problems, building trust between students, managers and academics and providing meaningful learning experiences for students.

Bendigo Climate Change Impacts Risk Assessment Workshop, July 2007. Participants analyse the risks using systems tools

The Integrated Assessment of Climate Change Impacts on Urban Settlements (IACCIUS) Project

IACCIUS collaborates with local, State and Federal governments to gain a better understanding of the local impacts of climate change.

IACCIUS focuses on small-medium sized towns across a variety of climatic regions. Canberra, Queanbeyan, Cooma, Bendigo, and Darwin were selected following consultation. The project objectives are:

1. to develop insights into vulnerabilities and adaptive capacity of the towns studied,
2. to develop generic insights and frameworks for understanding the interaction between urban systems and climate change,
3. methodological development, incorporating urban issues into integrated assessment.

IACCIUS is funded by the Australian Greenhouse Office's Integrated Assessment of Human Settlements Sub-program. The project team includes Professor Steve Dovers, Dr Geraldine Teakle, Paula Sutton, Professor Mike Hutchinson, Professor Pat Troy, Dr Rob Dyball, Leo Carroll, Carina Wyborn and Alex Campbell-Wilson.

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

- SRES1001 Resources, Environment and Society: Geography of Sustainability
- SRES1003 Environment and Society Research Methods
- SRES1004 Australia's Environment
- SRES1008 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 the last 12 months, Fenner staff have 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

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

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
  - Environment
  - 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 SRES1001 won a **national teaching award** and continues to set the standard at ANU.
See our website for more details.

Fenner School 2008 Courses

* 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	SRES1001 Resources, Environment and Society: Geography of Sustainability			SRES1004 Australia's Environment
1/2	SRES1008 Australia, Asia and the Pacific	SRES1003 Environment and Society Research Methods	GEOL1006 The Blue Planet	
Intensive Courses	SRES2010 Australia's Forests (Winter - Jul) SRES2017 Vietnam Field School (Summer - Jan/Feb)	SRES2012 Cities and their Hinterlands (Winter - Jul)		SRES2008 Hydrology for Natural Resource Management (Summer - Jan/Feb)
2/1	SRES2007 Economics for the Environment	SRES2011 Human Ecology SRES2015 Introduction to Remote Sensing & GIS		SRES2016 Landscape Systems 1: Landforms and Soils SRES2019 Landscape Systems 2: Vegetation Ecology
2/2	SRES2013 People, Environment and Development	* SRES2009 Ecological Measurement and Modelling (next offered in 2008) SRES2014 Qualitative Research Methods for Sustainability	SRES2004 Weather, Climate and Fire	
Intensive Courses	SRES3007 Participatory Resource Management: Addressing Environmental Conflict (Winter -July +S2) SRES3033 International Environmental Policy (Feb+S1 taught in 3 blocks)	SRES3023 Agroecology and Sustainable Systems (Spring - Nov/Dec) SRES3035 Bayesian Networks for Natural Resource Management (Summer - Feb)	SRES3026 Geomorphology (Summer -Jan/Feb)	SRES3008 Fire in the Environment (Summer - Jan/Feb) SRES3034 Water Quality and Environmental Flow Assessment (Autumn - Jun/Jul)
3/1	SRES3028 Environmental Policy and Planning	SRES3024 Applied Geographic Information Science SRES3036 Integrative Research Methods	SRES3029 Palaeo-Environmental Reconstruction	SRES3005 Water Resource Management SRES3014 Vegetation Management
3/2	SRES3018 Policy and Institutional Analysis	SRES3021 Human Futures	* SRES3013 Climatology (next offered in 2008) * SRES3020 Greenhouse Science and Policy (next offered in 2009) SRES3022 Environmental Biogeography and Global Ecology	SRES3002 Soil Resources SRES3004 Land & Catchment Management
3	**Independent Research Projects (SRES3010) and Special Topics (SRES3016) offered in all Programs**			
	Forest Science, Policy and Management			
4/1	SRES4006 Forest Policies and Practices			SRES4004 Farm and Urban Forestry * SRES4007 Forest Conservation and Production Genetics (next offered in 2008)
4/2				SRES4002 Sustainable Forest Management SRES4003 Sustainable Forest Planning SRES4008 Forest Products * SRES4009 Forest Operations (next offered in 2009)
4	**HONOURS OFFERED IN ALL FENNER SCHOOL PROGRAMS**			

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

correct at 7 August 2007

UNDERGRADUATE FIELD EXCURSIONS

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
(SRES1001)

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
(SRES2010)

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
(SRES2011)

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 (SRES2017)

8-28 January, 2008

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
(SRES3005)

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
(SRES3022)

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.

ACADEMIC STAFF

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Professor & Deputy Head
P.J. Kanowski BScForHons(ANU), DPhil(Oxon)

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J. Norton BSc(Cambridge), PhD(Imperial College)
I. White BSc, MSc, PhD(Syd), FTSE

Associate Professors
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J.A. Lindesay BA(Hons), HDipEd, PhD(Witw)

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D. Driscoll BSc (Melb), BSc(Hons)(ANU), PhD (UWA)
D.C. Dumaresq BA(Qld)
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R.S.B. Greene BSc, PhD(WA)
R. Heinsohn PhD(ANU)
J. Kesteven PhD(ANU)
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J.T. Wood MA (Cantab), MSc(Wales), PhD(Birmingham), A.Stat.

Lecturers, Research Fellows and Postdoctoral Fellows
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PhD

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PhD continued

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MPhil

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Nic Gellie
Suzzanne Gray
Peter Lezaich
David Mannes
Karissa Preuss

Masters

Muhammad Arshad	MEnvSc
Israel Bewang	MFor
Geoffrey Buchanan	MGeoS
Jean-Bernard Carrasco	MGeoS
Dominic Cooper	MEnvSc
Will Fargher	MEnvS
Helen King	MEnvS
Hai Anh Nguyen	MEnvSc
Margaret Ouma	MEnvS
Luke Pinner	MEnvS
Matthew Ruffin	MEnvS
Michael Ryan	MFor
Tony Stuart	MFor
Ian Swain	MEnvS
Deazy Rachmi Trisatya	MEnvS
Purdey Wong	MRes
Tanya Zeriga	Mfor

Graduate Diploma

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James Berrell	GDipSc
David Heap	GDip
Melissa Jaques	GDip
Gordana Josipovic	GDip
Sandra Lauer	SGDip
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Diana Mahayani	GDip
Gemma McBride	GDipEnvSc
Elizabeth Noble	GDRES
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Paul Ratcliffe	GDip
Yuki Shiga	GDipGeoS
Chin-We Tang	GDip
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Graduate Certificate

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Honours

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Lemmi Briedis

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Simon Roberts

Ian Scanlan

Jennifer Smits

Alex Stodulka

Nathan Weber

Kirien Whan

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Associate Professor Richard Baker

Undergraduate Convenor
Geography Program Convenor

Deputy Dean ANU College of Science

Environmental policy and planning, Indigenous resource management issues, environmental education, university teaching methods

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Career Brief

Richard was born and bred in Canberra. From 1990 to 1993 he was 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 SRES1001 won a 2003 National Teaching award. In 2006 he won a national Carrick teaching award and in 2007 a national Carrick Citation for Outstanding Contributions to Student Learning.

Professional Activities

My teaching at ANU includes coordinating the first year SRES course 'Resources, Environment and Society', the Vietnam Field School SRES2017 and co-teaching the third year course 'Environmental Policy and Planning'. 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 worked in Vietnam with the IUCN (International Union for the Conservation of Nature and Natural Resources), (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* (published in 1999 by Allen and Unwin) and *Working on Country* (published in 2001 by 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

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 and 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, *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 (eg 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 early 2007 I have been working on a long term study of possums, including how demography, genetic structure and life history strategies are influenced by variability in habitat and climate.

Selected Publications

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

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.

Banks, S.C. *et al.* 2005. The effects of habitat fragmentation via forestry plantation establishment on spatial genotypic structure in the small marsupial carnivore, *Antechinus agilis*. *Molecular Ecology*, 14, 1667-1680.

Banks, S.C. *et al.* 2003. Demographic monitoring of an entire species by genetic analysis of non-invasively collected material. *Animal Conservation* 6: 101-107.

Dr Cris Brack

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

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Career Brief

Cris completed his undergraduate Honours degree at ANU in 1982 then worked in the field in the biggest plantation district in NSW. After promotion to Forest Inventory Officer, he designed inventories and information systems for NSW. After 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, 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 2006 my research focused on: measuring and reporting on the carbon sequestration at a national level; determining the environmental and economic value of urban forests; enhancing inventory data collection (including the use of LIDAR and ground-based lasers); and determining the impact of uncertainty on 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 Vice-Chancellor's Excellence in Teaching Award in 2006. Winner of a national Carrick Citation for Outstanding Contributions to Student Learning in 2007.

Selected Publications

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

Brack, C.L. (2006) Updating Urban Forest Inventories: An example of the DISMUT model. *Urban Forestry* and *Urban Greening*. 5:189–194

Brack, C.L., Richards, G. and Waterworth. R. (2006) Integrated and comprehensive emissions estimation for Greenhouse Gases. *Sustainability Science* 1: 91 – 106.

McElhinny, C., Gibbons, P., Brack, C.L. and Bauhus, J. (2006) Fauna-habitat relationships: a basis for identifying key stand structural attributes in temperate Australian eucalypt forests and woodlands. *Pacific Conservation Biology* 12: 89 - 110.

Dr Sara Beavis

Research Fellow
Spatial and temporal analysis of erosion and landuse change; impacts of farm dams on catchment hydrology; environmental geology

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Professional Activities

Temporal and spatial analysis of anthropogenic disturbances to landscapes and impacts on catchment hydrology. Measurement of land degradation processes (erosion, salinity and acid sulphate soils) impacting productivity and downstream water quality. Hydrological and policy implications of farm dam development.

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

Beavis SG and Jakeman AJ. Review of farm dam assessment studies relating to the Hawkesbury-Nepean River. Report to the NSW Department of Land and Water Conservation.

Beavis SG, Jakeman AJ, Zhang L and Gray SD. Erosional history of the Warrah Catchment, New South Wales. Hydrological Processes.

Crapper PF, Beavis SG and Zhang L. The relationship between climate and streamflow in the Namoi Catchment. Environment International.

Crapper PF, Beavis SG and Zhang L. Climate and hydrology in the Namoi Catchment. In. McDonald AD et al. (eds). *Proceedings International Congress on Modelling and Simulation,* MODSIM 97 University of Tasmania, December 8-11, 1997: vol. 1: 300-305.

Green TR, Beavis SG, Dietrich CR† and Jakeman AJ. Relating streambank erosion to in-stream transport of suspended sediment. Hydrological Processes.

Green TR, Jakeman AJ, Zhang Li, Beavis SG and Dietrich CR.† A framework for modelling sediment transport in a large basin. In. Summer W et al. (eds). *International Symposium on Modelling Soil Erosion, Sediment Transport and Closely Related Hydrological Processes*, Vienna, Austria, 13-17 July 1988: 21-30. (IAHS Publ. No. 249).

Jakeman AJ, Green TR, Zhang L, Beavis SE, Evans JP, Dietrich CR†and Barnes B. Modelling catchment erosion, sediment and nutrient transport in large basins. In. Penning de Vries FWT et al. (eds). *Soil erosion at multiple scales*. Wallingford, UK: CABI Publishing: 343-355.

Zhang L, Beavis SG, and Gray SD. Development of a spatial database for large scale catchment management. In. McDonald AD et al. (eds). *Proceedings International Congress on Modelling and Simulation,* MODSIM97 University of Tasmania, December 8-11, 1997. Vol. 1: 428-433.

Dr Sandra Berry

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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 three year post-doctoral fellowship at RSBS with the Cooperative Research Centre for Greenhouse Accounting, followed by her current three year appointment at FSES.

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 David Carpenter

Project Coordinator – Integrating Sustainability

Education for Sustainability, Experiential Education, Human Ecology

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Career Brief

David currently manages the Sustainability Office at ANU (ANUgreen) and has been seconded to work with the Fenner School as coordinator of the Integrating Sustainability Project. David is also the President of Australasian Campuses Towards Sustainability. David has a PhD in Human Ecology from ANU.

Professional Activities

David's research interests include Education for Sustainability and Whole of University approaches to sustainability.

Selected Publications

Carpenter, D.B (2006) Spanning the great divide: integrative environmental education for universities ***Proceedings of the 4th Environmental Management and Sustainable Universities Conference***, Stevens Point Wisconsin, ***June 26th – 29th 2006***

Carpenter, D.B and R. Dyball (2006) Outside in: experiential education for sustainability in Leal – Filho, W (ed.) ***Innovation and Communication for Sustainability***, Frankfurt:: Peter Lang Publishers

W. Leal – Filho and D.B. Carpenter (eds.) (2006) ***Sustainability in the Australasian University Context*** Frankfurt: Peter Lang Publishers

Carpenter, D.B., Meehan, B., and B. Mitchell (2006) Biodiversity planning in the tertiary sector: the challenge for universities, W. Leal – Filho and D.B. Carpenter (eds.) (2006) ***Sustainability in the Australasian University Context*** Frankfurt:: Peter Lang Publishers

Dyball, R. and D. Carpenter (2006) Human Ecology and Education for Sustainability, W. Leal – Filho and D.B. Carpenter (eds.) (2006) ***Sustainability in the Australasian University Context*** Frankfurt: Peter Lang Publishers

Reid, J., Carpenter, D.B., and B. Meehan (2006) Art for earths sake: A case of integrated environmental education from ANU, W. Leal – Filho and D.B. Carpenter (eds) (2006) ***Sustainability in the Australasian University Context*** Frankfurt: Peter Lang

Dr Geoff Cary

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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 and 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. Recently, Geoff has presented at conferences in Australia, Austria, and the Netherlands.

Selected Publications

Vivian LM, Cary GJ, Bradstock RA, Gill AM. In press. Influence of fire severity on the regeneration, recruitment and distribution of eucalypts in the Cotter River Catchment, ACT. ***Austral Ecology***.

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).

King KJ, Cary GJ, Bradstock RA, Chapman J, Pyrke A, 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: 527-540.

Cary GJ, Keane RK, Gardner RH, Lavorel S, Flannigan MD, Davies ID, Li C, Lenihan JM, Rupp TS, Mouillot F. 2006. Comparison of the sensitivity of landscape-fire-succession models to variation in terrain, fuel pattern, climate and weather. ***Landscape Ecology*** 21: 121-137.

Cary GJ. 2005. Research priorities arising from the 2002/2003 bushfire season in south-eastern Australia. ***Australian Forestry*** 68: 104-111.

Dovers S, Cary G, Lindenmayer, D. 2004. Fire research and policy priorities: insights from the 2003 National fire forum. *Australian Journal of Emergency Management* 19: 76-84.

Keane RE, Cary GJ, Davies ID, Flannigan MD, Gardner RH, Lavorel S, Lenihan JM, Li C, Rupp ST. 2004. A classification of landscape fire succession models: spatial simulations of fire and vegetation dynamics. *Ecological Modelling* 179: 3-27.

Cary G, Lindenmayer D, Dovers S. (Editors) (2003) *Australia Burning: Fire Ecology, Policy and Management Issues*. CSIRO Publishing, Melbourne.

Dr Barry Croke

Fellow (Joint appointment with FSES and Department of Mathematics)
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 as a visiting fellow, and is currently a joint FSES/Department of Mathematics Fellow.

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 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.

Selected Publications

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., 2005. 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.

Croke, B.F.W. and A.J. Jakeman, 2004. A Catchment Moisture Deficit module for the IHACRES rainfall-runoff model, ***Environmental Modelling and Software***. 19, 1-5.

Dr Bruce Doran

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Career Brief

Bruce studied at ANU from 1996-2004, completing a Bsc(RMES) and a PhD (RMES). After obtaining his PhD, he spent eighteen months as a postdoctoral fellow at the Regulatory Institutions Network (RegNet), within the Research School of Social Sciences (RSSS).

Research, Teaching & Professional Activities

My initial GIS-based research focused on wildlife management issues. When undertaking a PhD, I adapted some of the analytical techniques used in previous research to look into spatio-temporal aspects of the fear of crime in Wollongong, NSW. The focus was to develop a GIS-based analytical framework to look at collective responses to fear of crime. The information resulting from the analysis provided a means of investigating links between fear of crime, disorder and the actual occurrence of crime. 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. (2007) A GIS-based investigation of gaming venue catchments, *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 Cherney, A. (2006). 'Crime Mapping and CPTED: Measuring Impact and Fear of Crime Outcomes' The Australian and New Zealand Society of Criminology 19TH Annual Conference Criminology and Human Rights, 7-9th February, 2006.

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.

Doran, B and Lees, B. (2003). 'Using GIS to investigate spatio-temporal links between disorder, crime and the fear of crime'. Presented at: Graffiti and Disorder: Local Government, Law Enforcement and Community Responses. Brisbane, Australia, 18-19 August 2003. http://www.aic.gov.au/conferences/2003-graffiti/doran.html

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

Research Convenor

Professor
Theoretical, policy and institutional dimensions of sustainability
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Career Brief

Steve has degrees in ecology and geography and a PhD in environmental policy. His research centres on approaches to sustainability policy and environmental management that integrate the nature of substantive problems and natural systems, with a public policy and institutional perspective, including:

- policy and institutional analysis;
- decision making in the face of uncertainty;
- emergencies, climate change impacts;
- science-policy interactions;
- adaptive policy and management;
- natural resource management;
- interdisciplinary research theory and practice; and
- environmental history.

He focuses on interactions between human and natural systems and related policy and management questions, rather than on single disciplines or sectors – complex problems in environment and sustainability require an interdisciplinary and cross-sectoral approach. Steve's research combines rigorous scholarship and development of practical policy capacities.

Professor Dovers has authored, co-authored, edited or co-edited over two hundred articles, books, chapters, conference papers and reports, including over eighty refereed works and significant conference papers, and several highly regarded books. He has been chief investigator or co-investigator in externally-funded research projects worth A$1.6 million, and is regularly invited to speak at major policy-oriented conferences. Post-graduate research training is at the core of his research program, and he teaches the course Policy and Institutional Analysis (SRES 3028-6018).

Professional Activities

- Adjunct Principal Research Fellow, Charles Darwin University.
- Editorial boards of Global Environmental Change; Environmental Science and Policy (Assoc Editor); Australasian Journal of Environmental Management (Assoc Editor).

Member:

- Queanbeyan City Council Environment Advisory Committee
- Institute of Public Administration Australia
- Ecological Society of Australia
- International Society for Ecological Economics
- Environment Institute of Australia and NZ

Academic Highlights

Supervision of 40 past and current PhD students; +200 research and professional publications; +40 invited conference presentations in the past decade.

Selected Publications

Dovers, S. Price, R. 2007. The integration imperative in resource and environmental management. In: Hanna, K. Slocombe, D.S. (eds). *Integrated resource and environmental management.* Oxford University Press.

Hussey, K. and Dovers, S. (eds). 2007. *Managing water for Australia.* CSIRO Publishing.

Dovers, S. 2006. Precautionary policy assessment for sustainability. In: Fisher, E. et al. (eds). *Implementing the precautionary principle.* Edward Elgar.

Dovers, S. 2005. Environment and sustainability policy. Federation Press.

Connor, R., Dovers, S. 2004. *Institutional change for sustainable development.* Edward Elgar.

Dovers, S. and Wild River. S. (eds). 2003. *Managing Australia's environment.* Federation Press.

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, 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 will challenge 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
In collaboration SA DEH, our manipulative, replicated, large-scale mallee-fire experiment is in its fourth year. We have discovered important patterns of responses to fire in plants, birds, reptiles and beetles. A new 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.

Selected Publications

Driscoll D.A. and 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. and 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*** *Applications* 14,220-40.

Mr David Dumaresq

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 and 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 was Program convenor 1992-2004.

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. 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.

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

Derrick, J.W. and 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. and van Kerkhoff, L. (eds) 1997 Organic Agriculture in Australia. RIRDC 97/14. 220p.

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

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

Dr Robert Dyball

Human Ecology Program Convenor
HonoursConvenor

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.

2007 winner of a national Carrick Citation for Outstanding Contributions to Student Learning.

Selected Publications

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

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

Carpenter, D. and 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. and 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 School Student Advisor
Honours Convenor
Resource and Environmental Management Program Convenor

Senior Lecturer
Earth 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 the 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 Forestry Department to teach soils to forestry and resource management students. I own and manage a grazing property on which I am practising what I preach by planting trees to demonstrate the integration and viability of agroforestry and farm forestry while maintaining sustainable cattle, sheep and goat enterprises. I act as a consultant and advisor to landcare, agriculture (including alternative agriculture), forestry and mining. 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 any aspect 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). My fundamental interest is the critical relationship that exists between biota (trees) and soil - the effects that biota have on the formation and evolution of soils, regolith and landscapes. I research these relationships along with the Honours and postgraduate students 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 (both under and post graduate), include: Australia's Environment, Australian Landforms and Soils, Soil Resources and Management, Land and Catchment Management and Farm and Urban Forestry.

Selected Publications

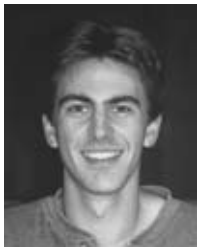
Fu, B., L.H. Newham, J.B. Field and A.J. Jakeman, 2007. A Catchment-scale model of rod erosion and sediment delivery. MODSIM (International Congress of Modelling and Simulation), Christchurch NZ, December.,

Field, J.B. and J.Schirmer, 2006. Non-wood economic values of farm forestry. AFG Sustainable forestry – everyone benefits, Launceston, October.

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

Dr Joern Fischer



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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.

I have recently begun 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 will investigate trends in tree regeneration under different livestock grazing regimes near Canberra. Fauna surveys also will be conducted, and habitat associations will be determined 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 September 2007, I visited Stanford University for one month to collaborate with Gretchen Daily, Paul Ehrlich, Hal Mooney and several other members of Gretchen's lab on a collaborative paper. The visit was funded by the Australian Academy of Science.

Selected Publications

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

Lindenmayer, D. B. and Fischer, J. (2007). Tackling the habitat fragmentation panchreston. *Trends in Ecology and 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 Richard Greene

Academic Advisor in RMES

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Soil and land management

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Career Brief

I 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 my university studies. After completing a BSc (with honours in Physical and Inorganic Chemistry) in 1970 from the University of Western Australia, I undertook a PhD in Soil Science from 1971-1975, also at the University of Western Australia. In 1975 I joined the Victorian Department of Agriculture, and worked as a soils research officer at the Irrigation Research Institute, Tatura. Then from 1985 to 1993, I 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 I joined the Australian National University, and am currently a Senior Lecturer in Soil and Land Management in the Fenner School of Environment and Society.

Research, Teaching and Professional Activities

Current research and professional activities include the following: (i) Minesite rehabilitation, especially where mining operations are in close proximity to sensitive wetlands, e.g. investigations are underway into the stabilisation of bund structures at Barrick Australia's Cowal Gold Project which is adjacent to the L.Cowal wetlands. (ii) The role of aeolian dust in environmental management and mineral exploration. These investigations are being carried out with other staff from the CRC for Landscape Environments and Mineral Exploration. Investigations are underway into the sources of dust and its role in salt transport. This work is being undertaken both in Australia and the mid-west of USA. The characterization of the dust component in transported catchment sediments that overlay mineral deposits is also being carried out. (iii) Nutrient Flows and Catchment Processes. The current work involves a study of processes of nutrient movement (especially P) from agricultural areas into waterways and the role of riparian zones in intercepting these nutrient flows. (iv) Rehabilitation of degraded agricultural lands in areas ranging from semi-arid rangelands through to alpine and sub-alpine areas. (v) Carbon sequestration especially the effects that land management practices such as cultivation and land degradation processes such as salinisation have on carbon sequestration.

Selected Publications

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.

Little, S.A., Hocking, P.J., and Greene, R.S.B. 2004. A preliminary study of the role of cover crops in improving soil fertility and yield for potato production. *Communications in Soil Science and Plant Nutrition.* 35, 471-494.

Greene, R.S.B., Eggleton, R.A. and Rengasamy, P 2002. Relationships between clay mineralogy and hardsetting properties of soils in the Carnarvon Horticultural District of Western Australia. *Applied Clay Science* , 20, 211-223.

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).

Susan E. Tate, SE, Greene, RSB, Scott, KM and McQueen,KG 2007. Recognition and characterisation of the aeolian component in soils in the Girilambone Region, north western New South Wales, Australia.

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 SRES in January 2002. Previously he was Foundation Director of the Australian Centre for Environmental Law at ANU.

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. and 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 and Campbell T The New Corporate Accountability, Cambridge UP 2007.

Associate Professor Rob Heinsohn

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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 most recent ARC funded project 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.

Professional Activities

Conservation biology and landscape ecology of endangered vertebrates, including large parrots, green pythons and migratory birds

Academic Highlights

I have had five of my PhD students complete their theses in 2006/07, and I also completed my long term ARC-funded project on Cape York parrots. In 2007 I 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.

Selected Publications

Wilson DW, Heinsohn R (2007) Geographic range, population structure and conservation status of the green python (Morelia viridis), a popular snake in the captive pet trade. *Australian Journal of Zoology*. 55: 147-154

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

Wilson D, Heinsohn R, Wood J (2006) Life-history traits and ontogenetic colour change in an arboreal tropical python, *Morelia viridis*. *Journal of Zoology* (London) 270 (3): 399-407

Starling M, Heinsohn R, Cockburn A, Langmore NE (2006) Cryptic gentes revealed in pallid cuckoos Cuculus pallidus using reflectance spectrophotometry. *Proceedings of the Royal Society, Series B* (London) 273 (1596): 1929-1934 pdf

Dr Natasha Herron

Research Fellow
Hydrology, salinity, erosion, 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.

She moved to iCAM in 2007.

Professional Activities

Natasha is currently working on the development of decision support systems to assist with coastal lake management and the NSW Catchment Management Authorities' catchment planning and incentives funding processes, and on better representation of groundwater processes within the IHACRES rainfall-runoff model. She is soon to commence working on an AGO funded project investigating the impacts of climate change and land use on upland Murray River Basin catchment water yields.

Natasha contributes to the teaching of Environmental Modelling (Math 3133) and is contributing to the development of the Graduate Environmental Modelling and Integrated Assessment courses, proposed for 2008.

Selected Publications

Herron N.F., Davis, J.R., 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, J.R. 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

Professor Michael Hutchinson

Fenner School 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.

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. 2006. ANUDEM Version 5.2 Centre for Resource and Environmental Studies, ANU, Canberra.

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.

Sharples, J.J. Hutchinson, M.F. and Jellett, D.R. 2005. On the horizontal scale of elevation dependence of Australian monthly precipitation. *Journal of Applied Meteorology* 44: 1850-1865.

Professor Tony Jakeman

Director, Integrated Catchment Assessment and Management Centre

Postgraduate Coursework Convenor

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 the 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 40 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, 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.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; he is also Deputy Convenor of the ANU Institute for Environment. Peter was appointed the Chair of Forestry at ANU in 1995, after 7 years as Lecturer at Oxford University's Forestry Institute, and work as a forest manager and researcher in Queensland. He is a 2007 FWPRDC Denis Cullity Fellow and a member of the Steering Committee of The Forests Dialogue. 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 was also a member of the ACT International Arboretum Jury and Interim Board in 2004-6.

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

McDermott, CL, B Cashore and P Kanowski. 2007. A global comparison of forest practice policies using Tasmania as a constant case. Global Institute of Sustainable Forestry, Yale Univ. GOSF Research Paper 010. 64 p.

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 and 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.

Kanowski, PJ. 2005. Intensively managed planted forests. Paper for The Forests Dialogue. http://research.yale.edu/gisf/tfd/impf%20scoping.html

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

Dr Karen King

Postdoctoral Fellow
Fire ecology, landscape simulation modelling, carbon, 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.

Professional Activities

I commenced a Postdoctoral Fellow position with the Australian Greenhouse Office in February 2007. The objective of this project is to investigate fire regimes, forest and carbon dynamics under climate change in south east Australia. A carbon dynamic model is being incorporated into a landscape fire regime model developed for a two million hectare study region encompassing the ACT and surrounding high country. Simulations will investigate carbon dynamics in this region with respect to fire, under the present climate, and under a range of projected climate scenarios in the CSIRO OzClim database. Implications for management will be explored in light of identified shifts in fire regimes and carbon dynamics under these climate change scenarios.

Selected Publications

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 Rebecca Letcher

Fellow
Integrated catchment assessment, modelling and decision support

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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 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.

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.

Through extensive scientific publications, numerous popular and semi-popular books and work with over 5000 volunteers at over 30 Earthwatch field camps, David's work has influenced government, non-government, conservation and industry organisations, as well as the general public.

Selected Publications

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., Claridge, A. W., Hazell, D., Michael, D. R., Crane, M., MacGregor, C. I., and Cunningham, R. B. 2003. *Wildlife on farms: how to conserve native wildlife*. CSIRO Publishing: Melbourne.

Lindenmayer, D. B., and Franklin, J. F. 2002. *Conserving forest biodiversity: a comprehensive multiscaled approach.* Island Press: Washington D.C.

Associate Professor Janette Lindesay

Fenner School Higher Degree Research Convener

Fenner School Honours Coordinator

Associate Professor
Climatology, applied climatology, Greenhouse science, climate variability and change

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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, and was Education Manager in the CRC for Greenhouse Accounting.

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
Professional leave in the Hadley Centre for Climate Change at the UK Met Office, working on an integrated statistical and dynamical forecasting method for European winter climate.

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

2007 winner of a Dean of the College of Science Award for Excellence in Teaching

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 Ben Macdonald

Postdoc Fellow
Management strategies for acid sulfate soils

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Professional Activities
Management strategies for acid sulfate soilsCurrently I am investigating acid sulfate soils, which have been described as the nastiest soils in the world. My colleagues and I have discovered that these soils produce significant amounts of greenhouse gases. These soils also release heavy metals and sulfuric acid into nearby waterways. I am also actively involved in the development of management strategies for these soils with industry and government. This research has taken me to field areas in northern NSW, Queensland, Northern Territory and Finland and recently I was the conference director of the 5th International Acid Sulfate Soil Conference.

Selected Publications
Macdonald, B.C.T., Denmead, O.T., White, I., Melville M.D., (2007). Natural sulfur dioxide emissions from coastal lowland soils. Journal of Atmospheric Environments. (in press)

Macdonald, B.C.T., White, I., Aström, 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

Green R, Waite TD, Melville MD, Macdonald BCT 2006. Characteristics of the acidity in acid sulfate soil drainage waters, McLeods Creek, northeastern NSW, *Australia. Environmental Chemistry* 3, 225-232.

Green R, Macdonald BCT, Melville MD, Waite TD 2006. Hydrochemistry of episodic drainage waters discharged from an acid sulfate soil affected catchment. *Journal of Hydrology* 325, 356-375

White, I, Smiles, D.E, Santomartino, S., van Oploo, P. Macdonald, B.C.T. and Waite T.D. 2003. Dewatering and the hydraulic properties of soft, sulfidic, coastal clay soils. *Water Resources Research*,39(10):1295-1308

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 Director of the ANU WildCountry Research and Policy Hub. He is principle Chief Investigator for an ARC Linkage research project which is investigating connectivity processes important for conservation assessment and planning, including: continental landscape productivity; dispersive fauna; biodiversity decline in extensive country; and trophic regulation by meso-predators. He is a member of the Earth Charter International Council; co-chairs the IUCN (World Conservation Union) Ethics Specialist Group; and is a member of the WildCountry Science Council. He teaches in the following courses: Introduction to Global Change; Introduction to Greenhouse; Environmental Biogeography and Global Ecology.

Academic Highlights

New collaborative research projects were commenced with Bush Heritage Australia, Rio Tinto Australia, Australian Department of Environment and Water Resources., the Australian Museum, and the Museum of Victoria.

Selected Publications

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., Soulé, M.E., Nix, H.A., Recher, H.F., Lesslie, R.G., Williams, J.E., J Woinarski, C. Z.R., Hobbs, J. and Possingham, H.P. (2007). Towards a scientific framework for the WildCountry project. Chapter 11 in Jianguo Wu and Richard J. Hobbs (editors) *Key Topics and Perspectives in Landscape Ecology*. Pages `92-208, Cambridge University Press.

Mackey B.G. and Su W. 2005. Dynamic Landscape Models for Tropical Rainforests. In. *Tropical Rainforests: Past, Present, and Future*. Edited by Eldredge Bermingham, Christopher Dick, and Craig Moritz. The University of Chicago Press, Chicago.

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

Postdoc Fellow

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Career Brief

Since completing his PhD on the Superb Parrot, Adrian has been a post-doctoral researcher at ANU. His main research project is the Mulligans Flat–Goorooyarroo Woodland Experiment - an ARC Linkage partnership with the ACT Government. The aim of the experiment 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. The project has a number of collaborators including CSIRO Sustainable Ecosystems, CSIRO Entomology and CSIRO Land and Water. Adrian also publishes work on issues in landscape ecology, conservation biology and restoration ecology.

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.

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., Lindenmayer, D. B., Barry, S. C., Nix, H. A., 2007, Large-scale spatial and temporal dynamics of the vulnerable and highly mobile Superb Parrot, *Journal of Biogeography*, 34:2, 289-304.

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 Ecology, and Silviculture
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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)

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)

Optimising silvicultural options for the moist hardwood forests of NE NSW (Collaborating agency, Forests NSW)

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.

Selected Publications

Tabor, J. McElhinny, C. Hickey, J. Woods, J., 2007. Colonisation of clearfelled coupes by rainforest tree species from mature mixed forest edges, Tasmania, Australia. *Forest Ecology and Management*, 240: 13-23

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. 2006. Fauna-habitat relationships: a basis for identifying key structural attributes in temperate Australian forests and woodlands. *Pacific Conservation Biology*, 12 (2), 89-110.

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.

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 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). In this work, approaches were developed 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 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 a project funded by the Commonwealth Department of Environment and Water Resources (DEW) in collaboration with the NSW Department of Environment and Climate Change (DECC) and the Great Lakes Council (GLC). iCAM's contribution to this project is the development of a decision-support system (DSS) for each of the Myall, Smiths and Wallis Lakes, located north of Newcastle (NSW). The DSS will enable end-users to explore the impacts of a range of management options on various water quality indicators and associated ecological, economic and social values.

Academic Highlights

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

Research Fellow
Impacts of changes in ultraviolet radiation on ecosystems, atmospheric chemistry modeling, remote sensing

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Professional Activities

- Impacts of changes in ultraviolet (UV) radiation on ecosystems
- Photochemical modeling of planetary atmospheres
- Remote sensing (spectroscopy) of planetary atmospheres and surfaces

Selected Publications

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)

A review of selected issues concerning the chemistry in Venus' middle atmosphere, F.P. Mills, and M. Allen, *Planetary and Space Science*, doi: 10.1016/j.pss.2007.01.012 (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, doi: 10.1016/j.rse.2006.07.025 (2007)

Vertical profiles of aerosol volume from high spectral resolution infrared transmission measurements: Results, A. Eldering, B.H. Kahn, F.P. Mills, F.W. Irion, H.M. Steele, and M.R. Gunson, *Journal of Geophysical Research* 109, D20201, doi: 10.1029/2004JD004623 (2004)

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), 15051-15059 2000.

A spectroscopic search for molecular oxygen in the Venus middle atmosphere, F.P. Mills, *Journal of Geophysical Research* 104(E12), 30757-30763 1999.

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

Ticehurst, J.L., 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*. (in press)

Drewry, J., 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*. (in press)

Newham, L.T.H., 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.

Newham, L.T.H., 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.

Newham, L.T.H., 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.

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

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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 and 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. Over 20 PhD students supervised in power systems, electric traction, digital communication, identification, target tracking and missile guidance, gas turbine modelling and environmental modelling. Consultant for Ferranti-Thompson Underwater Systems; British Gas; Defence Research Agency, Defford; Jaguar Cars Advanced Engineering; QinetiQ, Malvern; dstl, Farnborough.

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

Jakeman, A. J., 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.

Norton, J. P., 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).

Norton, J. P. 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.

Norton, J. P., 2005. Results to aid applications of ellipsoidal state bounds, ***Mathematical*** and ***Computer Modelling of Dynamical Systems*** 11, 2 (special issue on Set-Membership Modelling of Uncertainties in Dynamical Systems, eds. F. L. Chernousko and B. T. Polyak), 209-224.

Norton, J. P. and J. G. Chanat 2005. Linear time-varying models to investigate complex distributed dynamics: a rainfall-runoff example, ***Maths.*** and ***Computers in Simulation*** 69, 1-2,123-134.

Dr Jack Pezzey

Senior Fellow
Economic sustainability and growth, and market mechanisms of emissions control

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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.

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.

Selected Publications

Jotzo, Frank and John C.V. Pezzey (forthcoming), Optimal intensity targets for greenhouse gas emissions trading under uncertainty, *Environmental and Resource Economics*.

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. 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.

Pezzey, John C.V. 2003. Emission taxes and tradeable permits: a comparison of views on long run efficiency. *Environmental and Resource Economics*, Vol 26 No 2, 329-342.

Pezzey, John C.V. and John M. Anderies 2003. The effect of subsistence on collapse and institutional adaptation in population-resource societies, *Journal of Development Economics*, Vol 72, 299-320.

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 interest is concerned with developing 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 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 and Hart, B.T., 2005. Can Bayesian approaches in risk assessment help make better sense of ecotoxicological information? *Australasian Journal of Ecotoxicology* 11, 57-58

Pollino, C.A., Feehan, P., Grace, M., Hart, B.T. 2006. Reply to the comment by Crook and Koster on 'Temporal change in fish assemblages in the lower Goulburn River, south-eastern Australia.' *Marine and Freshwater Research* 57, 309 - 311

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* and *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

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)

reCollections , Australian Humanities Review and Landscapes (UK);

National Committee for the History and Philosophy of Science.

Academic Highlights

2003 Victorian Premier's Literary Prize for Science Writing for

Libby Robin, The Flight of the Emu: A Centenary History of Ornithology in Australia, (Melbourne University Press, 2001)

Selected Publications

Robin, L. 2007. *How a continent created a nation* (UNSW Press). http://www.unswpress.com.au/isbn/0868408913.htm

Robin, L. and Will Steffen 2007. 'History for the Anthropocene' *History Compass* http://www.blackwell-compass.com/subject/history/section_home?section=hico-world

Robin, L. 2007. New science for sustainability in an ancient land, in Sverker Sörlin and Paul Warde (eds) S*paces, Connections, Boundaries: Reconsidering environmental history,* London and New York, Palgrave MacMillan.

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

Robin, L. 2005. 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), 42-53

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

Robin, L. and Daniel Connell 2005. 'History and the environment', in R.Q. Grafton, Libby Robin and R.J. Wasson (eds) Understanding the *Environment: Bridging the Disciplinary Divide*s (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

Rose, D. 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.

Rose, D. 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.

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

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

Rose, D. 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.

Rose, D. 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.

Mr Andrew Ross

Postdoc Fellow
Integrated and adaptive water management, policy integration and implementation, rural environmental stewardship and agri-environmental policy.

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Career Brief

B.A (Econ), Cambridge University, UK, M.A. (Econ), Simon Fraser University, Burnaby, Canada.

Professional Activities

Andrew has worked at ANU since January 2005 on interdisciplinary and comparative research into institutional aspects of sustainable development, and agri-environmental and water policies in the Australia and Europe.

Currently Andrew is working on a comparative case study of adaptive water management in the Murraye Darling Basin in collaboration with NeWater a major EU-funded international project. Andrew is completing work on ?Policy Integration for Sustainable NRM: Joint Research and Policy Learning?; an applied research project exploring structures and processes for integrating environmental, social and economic considerations in policy making in Australian jurisdictions. He is also scoping work on rural environmental stewardship in collaboration with Land and Water Australia.

Before joining ANU (1985-2004) Andrew was a Director at the Commonwealth Departments of Environment and Heritage and the Treasury. He worked at the OECD for a year in 1999-2000. His experience includes sustainable development policy at the Department of Environment and Heritage, environmental performance reviews at the OECD, and industry, R&D, and international aid policy at the Treasury.

Selected Publications

Ross, A. S., Moellenkamp and C Pahl Wostl (2007, pending), 'Different Paths, Similar Goals? Water Resources Governance in Europe and Australia', Global Environmental Governance.

Ross, A. and S Dovers (2006), Policy Integration for Sustainable NRM: Joint Research and Policy Learning, report of Land and Water Australia project ANU-50, Canberra.

Ross, A. (2005), 'National Institutions For Sustainable Development: The Challenge Of Long Term Policy Integration', *Australasian Journal of Environmental Law and Policy,* Vol 10, No1.

Dr Jacqueline (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 seven 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 SRES 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 SRES3007 '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. and Pickworth, J. 2005. ***A social assessment of the Marine Scalefish Fishery of South Australia***. Case study report for FRDC Project 2003/056 A social assessment handbook for use by Australian fisheries managers in ESD assessment and monitoring. Bureau of Rural Sciences, Canberra. URL: < http://www.affashop.gov.au/product.asp?prodid=13282>

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

Mr Darren Sinclair

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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 SRES 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 and Policy*, Vol 19, No 4.

Professor Will Steffen

Director

Professor
Earth System science and sustainability

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Career Brief

Will Steffen, a US-born Australian citizen, began his career as a chemical engineer with a BSc from the University of Missouri. He holds MSc 1972. and PhD 1975. degrees in chemistry from the University of Florida. Following a research fellowship at the Research School of Chemistry at ANU from 1977-1980, Steffen worked in CSIRO for a decade. He then became executive officer for the Global Change and Terrestrial Ecosystems project of the International Geosphere-Biosphere Programme (IGBP). From 1998 to 2004 he was executive director of IGBP, based in Stockholm, Sweden. The IGBP research effort involves about 10,000 scientists located in 80 countries around the world. In mid-2004 Steffen took up a visiting fellowship with the Bureau of Rural Sciences, Department of Agriculture, Fisheries and Forestry, Australian Government. He also became science adviser to the Australian Greenhouse Office, a position he still holds. In October 2005 Steffen returned to ANU as director of the Centre for Resource and Environmental Studies (CRES).

Professional Activities

Will Steffen's research interests span a broad range within Earth System science, including terrestrial ecosystem interactions with global change, the global carbon cycle, incorporation of human processes in Earth System modelling and analysis, and sustainability and the Earth System. He takes a synthesis/integration approach to complex questions about the evolution of the human-environment relationship, working with teams of researchers within the School, across ANU and internationally.

Steffen has given numerous presentations on climate change, global change and Earth System science to political and business leaders as well as community groups. He also serves on several national and international advisory boards.

Selected Publications

Steffen, W., Sanderson, A., Tyson, P.D., Jäger, J., Matson, P., Moore III, B., Oldfield, F., Richardson, K., Schellnhuber, H.-J., Turner II, B.L. and Wasson, R.J. 2004. *Global Change and the Earth System: A Planet Under Pressure*. The IGBP Book Series, Springer-Verlag, Berlin, Heidelberg, New York, 336 pp.

Steffen, W., Andreae, M.O., Bolin, B., Crutzen, P.J., Cox, P., Cubasch, U., Held, H., Nakicenovic, N., Scholes, R., Talaue-McManus, L., Turner II, B.L. 2004. Abrupt changes: the Achilles heels of the Earth System. ***Environment***, 46 (No. 3): 9-20.

Gordon, L.J., Steffen, W., Jönsson, B.F., Folke, C., Falkenmark, M. and Johannessen, Å 2005. Human modification of global water vapor flows from the land surface. ***Proceedings of the National Academy of Sciences*** (***USA***) 102: 7612-7617.

Steffen, W. 2006. *Stronger evidence but new challenges: climate change science 2001-2005*. The Australian Greenhouse Office, Australian Government, Canberra, 28 pp.

Costanza, R., Graumlich, L. and Steffen, W. (eds) 2006. *Integrated History and Future of People on Earth,* Dahlem Workshop Report 96, 495 pp.

Dr Geraldine Teakle

Manager Integrated Assessment of Climate Change Impacts on Urban Settlements (IACCIUS) Project

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Risk, Integrated Research, Climate Change Impacts, Human Adaptation, Systems Methodology

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Career Brief

Geraldine Teakle completed a first class Honours Degree in Geophysics at Flinders University in 1994, a Masters of Environmental Studies at Adelaide University in 1998 and her PhD entitled Investigating Individual and Social Level Risk Adaptation in Human-Natural Systems in 2007. She also worked as an environmental geophysicist on a multiple hazard mapping project of Pacific cities at the South Pacific Applied Geoscience Commission from 1999 to 2001. In 2001 she moved to AusAID in the position of Environmental Analyst, where she managed the development of the Environmental Management System for Australia's Aid Program. Currently Geraldine is a research fellow at the Fenner School where she is managing a project that applies integrated 'systems' approaches to the assessment of climate change impacts on selected urban settlements in Australia.

Professional Activities

My research interests and activities include developing integrated systems approaches to risk, risk assessment, management and human adaptation. My theoretical work on systems approaches to risk involves introducing the dynamical systems thinking or 'integrative' paradigm into complex, interlinked human social and environmental problems. I first applied this approach in PhD research that focussed on risk perception, behaviour and adaptation associated with tropical cyclones in urban systems. I am currently developing practical applications of this approach in the context of climate change impacts and adaptation responses also in urban systems.

I also supervise students at the honours level that are concerned with risk perception of climate change impacts from the context of this paradigm.

Selected Publications

Teakle, G. (forthcoming). Tropical Cyclone Risk Perceptions in Darwin, Australia: A Comparison of Different Residential Groups. *Natural Hazards* (volume and edition tba).

Teakle, 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, G. and Biukoto, L., 2000. *Building Damage Assessment in Suva following May 19 riot and civil unrest*. Hazards Assessment Unit, SOPAC Technical Report 315, Suva, Fiji.

Teakle, 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.

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 (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 within 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 Softwar*e, 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 softwar*e, 18: 729-740.

Dr Matthew Tighe

Postdoctoral Fellow
Integrated assessment, Bayesian networks, soil chemistry

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Career Brief

Matt has a Bachelor of Natural Resources with Honours and a PhD in environmental contaminant fate and behaviour from the University of New England. His PhD was awarded in 2006 and he has been employed as a postdoctoral fellow in iCAM since November 2006.

Professional Activities

My research to date has centred on the environmental cycling of metalloids, and the imposition of chemical limitations upon speciation, mobility and availability. More recently I have become interested in the use of Bayesian networks in elucidation of exposure pathways and in risk assessment of contamination, and the integration of environmental system responses at different temporal and spatial scales. Currently I am working on Bayesian network approaches to assessing system responses to climate change in the central west of NSW, and developing similar approaches for assessing environmental asset and water quality responses to system drivers across several catchments in Tasmania, Victoria and NSW.

Selected Academic Achievements

The Australian Soil Science Society CG Stephens PhD Award in Soil Science (2006)

The Australian Association of Natural Resources Management Prize (NSW Branch) (1999)

The University of New England Noel Beadle Botany Prize (1998)

Selected Publications

Tighe, M., and P. Lockwood. 2007. The importance of non-crystalline hydroxide phases in sequential extractions to fractionate antimony in acid soils. *Communications in Soil Science and Plant Analysis* 38:1487-1501.

Tighe, M., P. Lockwood, and S. Wilson. 2005. Adsorption of antimony (V) by floodplain soils, amorphous iron (III) hydroxide and humic acid. *Journal of Environmental Monitoring* 7 (12):1177-1185.

Tighe, M., P. Ashley, P. Lockwood, and S. Wilson. 2005. Soil, water and pasture enrichment of antimony and arsenic within a coastal floodplain system. *Science of the Total Environment* 347 (1-3):175-186.

Tighe, M., P. Lockwood, S. Wilson, and L. Lisle. 2004. Comparison of digestion methods for ICP-OES analysis of a wide range of analytes in heavy metal contaminated soil samples with specific reference to arsenic and antimony. *Communications in Soil Science and Plant Analysis* 35 (9-10):1369-1385.

Professor Ian White FTSE

Professor
Ground and Surface Water Resources and Land Use Impacts

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Professional Activities

Ian's 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.

Selected Publications

Ghassemi, F. and White, I. (2006). *Inter-Basin Water Transfer: Case Studies from Australia, United States, Canada, China and India.* Cambridge University Press. UNESCO IHP International Series on Hydrology.

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, Falkland AJ, Perez P, Dray A , Metutera T, Metai E, Overmars M (2007) Challenges in freshwater management in low coral atolls. *Journal of Cleaner Production*, 15, 1522-1528. (available on line 13 October 2006).

White I, Melville MD, Macdonald BCT, Quirk RG, Robert Hawken R, Tunks M, Buckley D, Beattie R, Williams J Heath L (2007). From conflicts to wise practice agreement: Cooperative learning and coastal stewardship in estuarine floodplain management, Tweed River, eastern Australia. *Journal of Cleaner Production* 15, 1545-1558. (available on line 13 October 2006).

Dr Su Wild-River

Postdoc Fellow
Action research into practical, grounded solutions to environmental problems.
In particular, local government policy implementation and environmental risk management.

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Career Brief

Su Wild-River is the only Certified Environmental Practitioner at ANU. She is a member of the Australia/New Zealand Institute for Environment and the American Evaluation Society. She is ANU's Environmental Risk Management Officer, a Fenner School researcher, environmental consultant, rural land manager and community group member.

Professional Activities

- Evaluating the environmental outcomes from Environmental Protection laws
- Developing a practical, applied Comparative Environmental Risk Assessment method, taking out two CERAM trademarks, and running a two-day training course
- ANU Environmental Risk Management Officer achieving a 14 per cent environmental risk reduction
- Founding and continuous member of the award-winning ANUgreen team, and helping to lead environmental excellence at ANU,
- Articulating the theory that a Local-State Antinomy impedes the achievement of beneficial environmental outcomes in Australia,
- Facilitating expert contributions to, and co-editing *Australian Environmental Management* with Professor Steve Dovers,
- Principal Investigator of a Land and Water Australia-funded project to enhance rural local government capacity in natural resource management
- Integrating Themes Coordinator for Land and Water Australia
- Principal Investigator of a project to monitor and evaluate Land and Water Australia's Social and Institutional Research Program.

Academic Highlights

Su has been awarded three university medals for her contributions to environment and sustainability on campus. Her specific areas of expertise are now nationally recognised – in 2006 she was invited to write the local government chapter for the Australian State of the Environment Report and to co-write the CCH Guide to Environmental Risk Management.

Selected Publications

Dovers, S. (first author) and Wild-River, S. (eds) 2003, *Managing Australia's Environment*. The Federation Press: Sydney

Wild-River, S. (2006) Preventing pollution from the Australian National University. In Filho, W.L. and Carpenter, D. (eds) *Sustainability in the Australasian University Context*. Berlin: Peter Lang Eurpoaischer Verlag der Wissenschaften. pp. 267-282.

Wild-River, S. (2006) Australian local government Attempts to Deliver Beneficial Environmental Outcomes Local Environment: *The International Journal of Justice and Sustainability* 11:6, pp. 719-732.

Wild-River, S. (2006) The role of local government in environmental and heritage management. article prepared for the 2006 Australia State of the Environment Committee, Department of Environment and Heritage, Canberra, http://www.deh.gov.au/soe/integrative/local-government/index.html

Wild-River, S. (2005) Enhancing the sustainability efforts of local governments *International Journal of Innovation and Sustainability*. 1(1). pp. 46-64.

Wild-River, S. 2001, Comparative environmental risk assessment: a practical and applied method in *Australian Journal of Environmental Management*. pp.211-218.

Wild-River, S. 2002, Local Government in Dovers, S. and Wild-River, S. (eds) 2003, *Managing Australia's Environment*. Sydney: The Federation Press. pp. 338-362.

Wild-River, S. and Healy, S. (2006) *CCH Guide to Environmental Risk Management*. Sydney: CCH Australia.

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 ANU in 2001 in the Statistical Consulting Unit, 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.

Professor Jürgen Bauhus

Adjunct Professor
Silviculture, forest dynamics, nutrient cycling
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Career Brief

Jürgen 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 and plantations, 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 and Associate Editor of the Canadian Journal of Forest Research. He is directing the International PhD Program 'Forestry in Transition', and the international MSc course 'Forest Ecology and Management'.

Professional Activities

Current projects:

- The ARC funded project 'Guiding early silvicultural interventions through predicting canopy and crown dynamics in plantations of sub-tropical eucalypts' investigates the plasticity of green crowns of different species as affected by stand density, and their response to green pruning (see also PhD student Philip Alcorn).

- EU Project examining the role of smallholders in the sustainable management of forested landscapes in the Amazon (http://www.waldbau.uni-freiburg.de/forlive/).

- EU Project investigating the provision of ecosystem goods and services from plantations, see conference held in Bilbao, Spain, October 2006 (http://www.waldbau.uni-freiburg.de/bilbao.html).

- Determining the decay rates of coarse or woody debris of the most important central European tree species.

- 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 Cameroon' 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.

Selected Publications

Xiang, W., Bauhus, J. (2007) Does the addition of litter from N-fixing *Acacia mearnsii* accelerate leaf decomposition of *Eucalyptus globulus*? *Australian J. Bot.* (in press)

Alcorn, P. J., Pyttel, P., Bauhus, J., Smith, G., Thomas, D., James, R., Nicotra, A. (2007) Effects of initial planting density on branch development in four-year old plantation grown Eucalyptus pilularis and E. cloeziana trees. *For. Ecol.* and *Manag.* (in press)

McElhinny, C., Gibbons, P., Brack, C., Bauhus, J. (2006) Fauna-habitat relationships: a basis for identifying key stand structural attributes in temperate Australian eucalypt forests and woodlands. *Pac. Cons. Biol.* 12: 89-110.

Forrester, D.I., Bauhus, J., Cowie, A.L. (2006) Carbon allocation in a mixed-species plantation of *Eucalyptus globulus* and *Acacia mearnsii*. *For. Ecol.* and *Manag.* 233: 275-284.

Forrester, D.I., Bauhus, J., Cowie, A.L., Vanclay, J.K. (2006) Mixed-species plantations of *Eucalyptus* with nitrogen-fixing trees: A review. *For. Ecol.* and *Manag.* 233: 211-230.

Dr U.N. Bhati

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Economics and marketing
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Career Brief

U.N. Bhati's formal education is in agricultural economics. He has taught and carried out research in these subjects in India, Malaysia and Australia. During the early 1990s, while at the Australian Bureau of Agricultural and Resource Economics (ABARE), he had a chance encounter with forestry economics and marketing. He found the subjects professionally challenging and satisfying; since then, U.N. has been working on them. He has done some teaching but most of his time has gone into research on outlook for forest products, forest plantations and farm forestry. He has written articles, conference papers, consultancy reports, inquiry submissions and monographs.

Professional Activities

During 1997-2004, I worked on ANU Forestry Market Report Project. The project had the objectives of preparing and disseminating quarterly market reports on forest products and inputs to Australia's small-scale forest growers. The reports, covering a wide range of topics, were disseminated through forestry and farming magazines and newsletters. They were also made available through web sites of ANU (http://fennerschool.anu.edu.au/associated/marketreport/index.html), National Library of Australia and other organisations. The 2006 Australian Forest Growers President's award recognises the valuable contribution of ANU Forestry Market Report Project.

Since 2006, I have been working on the forest products market in India, focusing on India's paper and paperboard market.

Selected Publications

Bhati, U.N. and Jha, R. 2006. Emerging opportunities for Australia in India's paper and paperboard market. In Unwin, G. and Lyons, A. (eds), *Sustainable Forestry – Everybody Benefits*, Australian Forest Growers International Biennial Conference, 22–25 October 2006, Launceston, Tasmania. Pages 66-77.

Bhati, U.N. and Kanowski, P. 2006. Comments on the proposed taxation arrangements for investment in forestry managed investment schemes. 17 July 2006. A submission to the Review of the Taxation of Plantation Forestry, Australian Government Department of Treasury, Canberra; http://www.treasury.gov.au/documents/1122/PDF/073_U.N.Bhati_and_Peter_Kanowski.pdf.

Bhati, U.N. and Kwon, K.W. 2004. *The Forest Products Market in Korea*. School of Resources, Environment & Society, Faculty of Science, The Australian National University, Canberra; http://sres-associated.anu.edu.au/marketreport/Korea2004.pdf.

Bhati, U.N., Kanowski, P. and Ragg, W. 2002. ANU Forestry Market Report Project: Looking to the Future. In Wettenhall, D. (ed.), *Private Forestry – Sustainable, Accountable and Profitable*, Proceedings of Australian Forest Growers 2002 National Conference, 13–16 October 2002, Albany, Western Australia, stream session paper number 271.

Dargavel, J., Conley, K., Proctor, W., Ferguson, I. and Bhati, U.N. 1999. *Direct and Indirect Employment in the Forest Sector and Forest Sector Employment as a Proportion of Total Employment*, Montreal Process Project 6.5a, Final Report, School of Forestry and Resource Conservation, The University of Melbourne, January.

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 SRES3008 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 SRES. 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.

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
Sustainable use of biodiversity as a conservation tool; the precautionary principle and adaptive governance; the relationship between conservation and human livelihoods; environmental policy at international and national level;.

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Career Brief

Rosie completed Honours in Law and Science (in BoZo) at ANU in 1995 and gained a PhD in evolutionary ecology from Cambridge. From 2000 she carried out research and policy development on biodiversity conservation and sustainable use issues for international environmental organisations including WWF International, IUCN, TRAFFIC and Fauna and Flora International, focussing on wildlife trade, CITES, and the precautionary principle. She returned to Australia in 2006 and is currently a Research Fellow in the FATE Program at the University of New South Wales, as well as carrying on a range of private consulting activities.

Professional Activities

Research interests focus on two (linked) areas: how decision-making and policy responds to the uncertainty and complexity of ecological systems, examining real-world applications of the precautionary principle and the potential for 'adaptive governance' across a range of contexts; and the potential for sustainable use of wild resources to contribute to biodiversity conservation and rural livelihoods, in Australia and overseas. She is a member of the Steering Committee of IUCN Species Survival Commission's Sustainable Use Specialist Group

Academic Highlights

Rosie has not been an academic most of her working life, so her highlights are not strictly academic. These include, however: the key note address at IUCN Sustainable Use Specialist Group's Strategic Planning meeting in 2007; adoption by IUCN Council in 2007 of Guidelines on Applying the Precautionary Principle to Biodiversity Conservation, stemming directly from the process she coordinated; co-editing in 2005 the first book to examine the use of the precautionary principle in the biodiversity context; leading the development of WWF-wide CITES policy for the 2002 12th Conference of the Parties to CITES; Commonwealth Scholarship 1996-1999.

Selected Publications

Cooney R and Lang A In press. Taking uncertainty seriously: adaptive governance and the WTO. *European Journal of International Law*

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

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

Cooney R and 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

Professor Peter Cornish

Adjunct Professor
Agricultural systems design and management to improve productivity whilst reducing environmental impact

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Career Brief

Peter Cornish graduated in Agricultural Science (Honours) from the University of Sydney in 1968 and worked for CSIRO and NSW Agriculture for 25 years as a pasture ecologist then crop agronomist, with a break for his PhD at UNE 1976-9. In 1993 he joined UWS as the Foundation Professor of Agriculture (Farming Systems), a Chair endowed by the Vincent Fairfax Family Trust. His main interests have been in soil/plant water and phosphorus relations, in a broad farming systems context. This led him into the development of soil-conserving tillage systems in the 1980's, and subsequently into the integrated management of farms within catchments for improved environmental outcomes. He has been a member of several research advisory committees including the Wheat Research Council of Australia, Grains Research and Development Corporation, and Rural Industries R&t D Corporation. In 2003 he was the joint recipient with GRDC of the Prime Minister's Award for Excellence in Public Sector Administration, for a successful GRDC-funded national programme of farming systems research. Peter also leads the Education Program for the CRC-Irrigation Futures and is a member of the Executive Management Group

Professional Activities

Main present research interests are in: (i) quantifying diffuse pollutant exports from major rural land uses, understanding the relevant processes, and developing management options for farmers; and (ii) developing less unsustainable farming systems for the rich farming areas of northwestern NSW, with a focus on understanding and managing subsoil constraints (related to subsoil salinity) and optimising crop management strategies. He has supervised 15 research students (most PhD) and assisted with numerous others.

Selected Publications

Freebairn, D.M., Cornish, P.S., Anderson, W.K., Walker, S.R., Robinson, J.B. and Beswick, A.R. (2006). Management Systems in Climate Regions of the World – Australia. In 'Dryland Agriculture' 2nd ed. Agronomy Monograph 23. (American Society of Agronomy, Crop Science Society of America, Soil Science Society of America: Madison, Wisconsin USA.) Chapter 20: 837-878.

Lawrence, David; Dey, P; Karmakar, D and Cornish, PS (2006). Participation - for improved adoption, research, or both: two case studies. Turner N.C., Acuna T. and Johnson, R.C. (2006). 'Ground-breaking stuff'. Proceedings of the 13th Australian Agronomy Conference, 10-14 September 2006, Perth, Western Australia. Australian Society of Agronomy.

Madafiglio, G. P., Medd, R. W., Cornish, P. S. and van den Ven, R. 2006. Regulating seed production and yield loss of *Raphanus raphanistrum* with herbicides in wheat. *Weed Research* 45 (6) 50-60.

Popov, VH and Cornish, PS (2006). Atrazine tolerance of grass species with potential for use in vegetated filters in Australia. *Plant and Soil* 280: 115-126.

Sun, H and Cornish PS (2006). A catchment-based approach to recharge estimation in the Liverpool Plains, NSW Australia. *Australian Journal of Agricultural Research* 57: 309-320.

Pedroli, Bas; Pinto Correia, Teresa and Cornish, Peter (2006). Landscape – what's in it? Trends in European landscape science and priority themes for concerted research. *Landscape Ecology* 21 (3): 421–430

Popov, VH, Cornish, PS and Sun, H (2006). Vegetated biofilters: the relative importance of infiltration and adsorption in reducing loads of water-soluble herbicides in agricultural runoff. *Agriculture, Ecosystems and Environment* 114: 351-359

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

Career 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. (1995) Morphological variation among populations of the Mountain Brushtail Possum, Trichosurus caninus Ogilby *(Phalangeridae: Marsupialia). Australian Journal of Zoology* 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. (1991). Sex, sport and body size dependency of haematology in highly trained athletes. *Medicine and Science in Sport and Exercise* 23(7) 788-794

Dr John Dargavel

Visiting Fellow
Forest history and 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 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

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 FSES 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.

Professor Philip Evans

Professor, University of British Columbia

Adjunct Professor
Surface modification of wood, relationships between structure and function and properties of wood and wood composites

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Career Brief

Phil obtained a first class honours degree in Wood Science from the University of Wales (Bangor). He obtained a PhD, also from the University of Wales, in 1984. He worked as a postdoctoral fellow at Abertay University Dundee, Scotland, before joining ANU as a Lecturer in 1986. He was promoted to Senior Lecturer in 1992 and Reader in 1998. In 2000 he was appointed as Director of the University's Centre for Science and Engineering of Materials. Phil moved to UBC in 2001 to become Director of the Centre for Advanced Wood Processing at UBC (Canada's national centre for education extension and research for advanced wood processing industries). He was appointed as an Adjunct Professor at ANU in 2002.

Mankind faces many significant challenges arising from its profligate use of natural resources and unwise choices in the conversion of natural resources into materials or products that are incompatible with or deleterious to natural systems. The development of advanced wood and biobased composites that can more effectively compete with energy-intensive materials such as plastics, metals and ceramics, materials that cannot be produced on a sustainable basis, can make a positive contribution to rectifying some of the damage to the environment that is now self evident. Developing advanced bio-based materials with similar cost and performance characteristics as plastics, metals and ceramics is, however, a tremendous challenge. Surface modification of wood is a cost effective way of upgrading some characteristics in which wood is deficient, ie UV resistance, and has been one of my major research areas todate. A greater understanding of the relationship between the structure of wood and wood composites and their function and properties could lead to the development of new biocomposites with enhanced mechanical properties, and this is an area I'm currently exploring with colleagues in the Department of Applied Mathematics in RSPhysSE. My research interests and continuing involvement in the teaching of forest products maintain my link with ANU. Academic Highlights

Selected Publications

Semple, K.E., Evans, P.D. 2007. Manufacture of wood-cement composites from Acacia mangium. II. Use of accelerators in the manufacture of wood-wool cement boards from *A. mangium*. *Wood and Fiber Science* 39:(1):120-131.

Kataoka, Y., Kiguchi, M., Williams, R.S., Evans, P.D. 2007. Violet light causes photodegradation of wood beyond the zone affected by ultraviolet light. *Holzforschung* 61(1):23-27.

Evans, PD, Palmer, G., Chowdhury, M. 2007. Bleaching treatments for blue-stained lodgepole pine affected by the mountain pine beetle Dendroctonus ponderosae. *European Journal of Wood and Wood using Industries* (Holz als Roh und Werkstoff) Published on line by Springer Link DOI 10.1007/s00107-007-0177-5

Ximenes, F.A., Evans, P.D. 2006. Protection of wood using oxy-aluminum compounds. *Forest Products Journal*. 56(11/12):116-122.

Kiguchi, M., Kataoka, Y., Matsunaga, H., Yamamoto, K., Evans, P.D. 2006. Surface deterioration of wood-four polypropylene composites by weathering trials. *Wood Science* (53(3): 234-238.

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 – 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 Nigel Hall

Visiting Fellow
Integrated assessment, bioeconomic modelling, environmental economics and policy

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Career Brief

Dr Hall is a natural resource economist specialising in natural resource issues with 30 years' experience as a researcher and research manager, in ABARE, as a Consultant and at ANU. He has experience in research planning and management, policy analysis and in the modelling of bio-economic systems in collaboration with agronomists, hydrologists and other scientists.

Dr Hall grew up on a farm in Northumberland and studied agricultural science before specialising in economics at Newcastle University. He followed this with a postgraduate year at Oxford studying Agricultural Economics under Colin Clark. After working some years with the Bureau of Agricultural Economics, he was awarded a Public Service Board Scholarship to undertake a PhD at Newcastle University. On completion of the doctorate, he returned to Australia and the BAE. BAE and its successor ABARE have been key government research institutions influencing Australian Federal Government policies in agriculture and natural resources.

Professional Activities

Current research interests include modelling the economics of water and salt management in Australia and overseas and the economics of greenhouse gas abatement through agricultural change.

Recent work includes: Consultations for the iCAM/University of Tasmania Landscape Logic project in Victoria and Tasmania and contributions to work on water values in the Burdekin catchment.

Selected Publications

Greiner, R. and Hall, N. (2006). Social, Economic, Cultural and Environmental Values of Streams and Wetlands in the Burdekin Dry Tropics Region. Burdekin Dry Tropics NRM: Townsville. 107pp.

Hall, N., S. Yongvanit, R. Lertsirivorakul, R. Last, A. Yuvaniyama, Y. Anuluxtipun, W. Milne-Home and R. Greiner. (2006). Changing land use to manage salinity in northeast Thailand. Pages 292-301 in K-C. Goh and S. Yongvanit, editors. Change and Development in Southeast Asia in an era of Globalisation. Pearson South Asia Education Pty Ltd, Singapore

Hall, N., Oliver, M., Jakeman, T., Nicholson, A. and Watson. B. (2004). Land Use change for Salinity Management: A Participatory Model. In Proceedings of the International Environmental Modelling and Software Society Conference, Osnabrueck.

Hall, N.H., (2001) Linear and quadratic models of the southern Murray-Darling basin, *Environment International*, 27, 219-23

Dunlop, M, Hall, N, Watson, W, Gordon, L and Foran, B, (2001) Water use in Australia, CSIRO Sustainable Ecosystems, Canberra

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 SRES (now 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 (SRES 4008) 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 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.

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hartmut68@hotmail.com

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 main area of focus is the Melanesian region of the southwest Pacific.

Professional Activities

Under Professor Peter Kanowski as team leader, On a part-time level Dr. Holzknecht coordinates and manages a just begun four-year project, funded by the Australian Centre for International Agricultural Research, entitled 'Integrating Commercial Tree Species into Papua New Guinea Farming Systems'. This involves regular periods of fieldwork in Papua New Guinea [PNG]; project work will be in conjunction with a number of PNG partner organizations and individuals as well as with a small group of Australian-based collaborating scientists.

Dr. Holzknecht also supervises graduate students in FSES, both at Independent Research Project/Masters Research Essay and PhD levels.

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

Selected Recent Publications

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]

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]

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.

Holzknecht, H. 2005 Session Opening and Closing Remarks, 'Overcoming Constraints in Papua New Guinea'. February 18. Lowy Institute for International Policy, Sydney.

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].

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)

James, R. and A. 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. and Wong. S.C. (2006) Measurement of soil CO2 efflux using soda lime absorption: both quantitative and reliable. *Soil Biology and Biochemistry* 38(5):1121-1131.

van Gorsel E., Leuning R., Cleugh H.A., Keith H., Suni T. (2007). Nocturnal carbon efflux: reconciliation of eddy covariance and chamber measurements using an alternative to the u*-threshold filtering technique. *Tellus B* (in press).

Kirschbaum M.U.F., Keith H., Leuning R., Cleugh H.A., Jacobsen K.L., van Gorsel E., Raison R.J. (2007) Modelling net ecosystem carbon and water exchange of a temperate Eucalyptus delegatensis forest using multiple constraints. *Agricultural Forest Meteorology* (in press).

Professor Brian Lees

Professor of Geography
School of Physical, Environmental and Mathematical Sciences,
Australian Defence Force Academy

Brian has been appointed as an Adjunct Professor in the State Key Laboratory of Resources and Environmental Information Systems (LREIS), Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Science, Beijing, and also as an Adjunct Professor in the State Key Laboratory for Information Engineering in Surveying, Mapping and Remote Sensing (LMARS), Wuhan University, China.

Visiting Fellow
Geographical information science, geomorphology

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Career Brief

Brian was initially commissioned as a regular officer in the RAF. After gaining civil commercial pilot's and flight navigator's licences he flew with ADASTRA on exploration and mapping projects. He subsequently took a first-class honours degree in geomorphology from the University of Sydney. From 1977 he worked on a number of joint-venture projects becoming a director of two small exploration companies and the exploration manager of a third. Brian obtained a PhD, also from the University of Sydney, in 1984. Brian has received a number of awards for his work including the Australasian Institute of Spatial Information Science and Technology (AISIST) Prize in recognition of a 'substantial contribution to the study of the science of Urban and Regional Information Systems', 1997; the Land Victoria Fellowship, University of Melbourne, 1999 and the Eminent Individual Award; Australasian Urban and Regional Information Systems Association (AURISA) 1999. He is Editor-in-Chief of the prestigious International Journal of Geographic Information Science, is on the editorial boards of GEOINFORMATICA and has just completed a term on the editorial board of Transactions in GIS. Brian is a Full Member of the International Geographical Union Commission on Geographical Information Science representing Asia and Australasia (2004 - 2008).

Professional Activities

I maintain an active research and teaching program focused on aspects of Global Change. The first phase was the construction of a database of geomorphic evidence for past climate change across northern Australia. In the second phase I set up a research program to improve the reliability of change detection techniques. This led to work in adapting inductive and data driven modelling techniques to the predictive mapping of land cover and land degradation. My students and I have built up comprehensive GIS databases based on a range of field sites. These have been used to test, and refine the use of inductive learning, and other artificial intelligence techniques such as neural networks and genetic algorithms, for environmental management. They have been very successful. My research activity continues to be the development and application of tools to carry out integrated analysis of global data. My teaching is intimately linked with this research.

Selected Publications

Lees, B.G. 2007. Remotely Sensed Data, Chapter 6 in Wilson, J.P. and Fotheringham, A.S. '*A Handbook of GIS*', Blackwell, ISBN13:978-1-4051-0795-2.

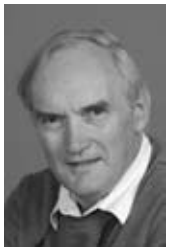
Huang, Z and Lees, B.G. 2007. Assessing a single classification accuracy measure to deal with the imprecision of location and class: fuzzy weighted Kappa versus Kappa. *Journal of Spatial Science*. In press.

Lees, B.G. 2006. The Spatial Analysis of Spectral Data - Extracting the Neglected Data. *Applied GIS*. 2(2).

Lees, B.G. 2006. Timing and formation of coastal dunes in northern and eastern Australia. *Journal of Coastal Research*.

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

Dr Colin Matheson



Visiting Fellow
Quantitative, population and conservation genetics of forest trees, genetics of wood properties

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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 SRES 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.

Dr Barry Newell

Visiting Fellow
The dynamics of society-nature interactions.

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Career Brief

Dr Barry Newell is a physicist who has a background in system dynamics, astrophysics, mathematics and science education, operations research, and management. He has 20 years' experience in astronomical research followed by some 14 year's experience in industrial process improvement, working in particular with Ford Australia, various companies within the Rio Tinto complex, and Telstra. Since 2003 he has focussed his research activities on the dynamics of human-environment systems.

Professional Activities

Dr Newell's research is concerned with practical ways to explore the feedback dynamics of real-world complexes. He is currently engaged in writing, in collaboration with Dr Katrina Proust, a series of textbooks entitled Managing Society-Nature Interactions. These books are designed to promote a wider understanding of the basic dynamics of human-environment system behaviour, management, and policy making. The books are intended for use in undergraduate courses and in in-service workshops for managers and policy-makers. He is also involved in the Fenner School Canberra sustainability study.

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.

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. [online] URL: http://www.ecologyandsociety.org/vol11/iss1/art25

Proust, K. and Newell, B., 2006, Catchment and Community: Towards a management-focused dynamical study of the ACT water system. Research paper for ACTEW Corporation, Canberra.

Newell, B., Proust, K., Dyball, R., and McManus, P., 2007, Seeing Obesity as a Systems Problem, NSW Public Health Bulletin, invited paper in press.

Proust, K., Dovers, S., Foran, B., Newell, B., Steffen, W. and Troy, P., 2007, Climate, Energy and Water: Accounting for the Links. Discussion paper for Land and Water Australia. http://www.lwa.gov.au/downloads/publications_pdf/ER071256.pdf

Mr Bob Newman OAM

Visiting Fellow
Forest history and forest policy

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Career Brief

Bob Newman who is a Registered Professional Forester, graduated in Forest Science at the Melbourne University following attendance at the Australian Forestry School, Canberra, the precursor to ANU Forestry.

He also graduated in Business Administration at the Hemingway Robertson Institute in Melbourne. After graduating he held forest management positions in private industry in Tasmania and Victoria. With his initial background before graduating at the CSIRO Division of Forest Products in South Melbourne, he then pursued a career for some 10 years in sawmilling, veneer production and timber presentation, and timber marketing.

Since the 1970's he has been consulting with a wide spectrum of forestry and forest products briefs, both domestically and internationally and continues to do so.

His contribution to date for organisations supporting the forestry profession has been wide and includes Vice-President, Chairman and Fellow of the Commonwealth Forestry Association, President of the Association of Consulting Foresters of Australia and he has had a 50 year membership in the Institute of Foresters of Australia. He has had a long interest in Australian Forest Growers Inc and was Hon National Secretary and policy director for some 8 years.

He comes to ANU to support student studies. Forest Management, provide background experience on Forestry Education and contribute to the development of useful forest policy to ensure sustainable forest management continues as a major factor in the Australian economy.

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 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 and Transitional Dysfunction

Chair of:

The Barton Group (Environment Industry Development Action Agenda)

National Environmental Education Council

CRC-CARE (Cooperative Research Centre for Contamination Assessment and Remediation of the Environment)

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 and 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 David Post

Adjunct Fellow
Hydrology, water quality

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Career Brief

February 1999 – Present : Senior research scientist, CSIRO Land and Water, examining the relationships between landscape attributes and hydrologic response.

July 1996 – January 1999 : Post-doctoral research fellow, Oregon State University, carrying out research into the factors influencing hydrologic response for a range of sites within the United States long-term ecological research (LTER) network.

April 1992 - June 1996 : Ph.D, Centre for Resource and Environmental Studies, Australian National University, ACT. 1997. Identification of relationships between catchment-scale hydrologic response and landscape attributes.

April 1990 - April 1992 : Experimental Scientist, CSIRO Division of Atmospheric Research, carrying out research into the coupling of ocean and atmospheric general circulation models (GCM's).

December 1988 – December 1989 : B.Sc (Hons.), University of Newcastle, NSW. 1990. A preliminary study of fog and rainwater quality in the Barrington Tops and New England regions of NSW.

Professional Activities

I am currently working full time on the Murray-Darling Basin Sustainable Yield project.

Selected Publications

Post, D. A. 2005. A new method for estimating flow duration curves : an application to the Burdekin River Catchment, North Queensland, Australia. *IEMSs 2005 Proceedings of the International Environmental Modelling and Software Society*, Osnabruck, Germany, 14-17 June, 2005, International Environmental Modelling and Software Society.

Post, D. A., Kinsey-Henderson, A. E., Stewart, L. K., Roth, C. H. and Reghenzani, R. 2003. Optimising drainage from sugar cane fields using a one-dimensional flow routing model : A case study from Ripple Creek, North Queensland. *Environmental Modelling and Software* 18 : 713-720.

Post, D. A. and Jones, J. A. 2001. Hydrologic regimes of forested, mountainous, headwater basins in New Hampshire, North Carolina, Oregon, and Puerto Rico. *Advances in Water Resources* 24 : 1195-1210.

Post, D. A. and Jakeman, A. J. 1999. Predicting the daily streamflow of ungauged catchments in S. E. Australia by regionalising the parameters of a lumped conceptual rainfall-runoff model. *Ecological Modelling* 123 : 91-104.

Post, D. A.; Jones, J. A. and Grant, G. E. 1998. An improved methodology for predicting the daily hydrologic response of ungauged catchments. *Environmental Modelling and Software* 13 : 395-403.

Post, D. A. and Jakeman, A. J. 1996. Relationships between physical descriptors and hydrologic response characteristics in small Australian mountain ash catchments. *Hydrological Processes* 10 : 877-892.

Dr Katrina Proust

Visiting Fellow
Applied history, and the dynamics of society-nature interactions.

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Career Brief

After working in the legal profession, science management, cultural heritage conservation and management, she completed a PhD in 2004 at the ANU Centre for Resource and Environmental Studies. Her research involved development of a way to integrate historical research with studies of feedback dynamics in human-environment systems. Against a case study of irrigation salinity in British India and south-eastern Australia, this research explored the difficulties of learning from past mistakes in natural resource management.

Professional Activities

Katrina is collaborating with Dr Barry Newell on a series of textbooks entitled Managing Society-Nature Interactions. She is part of a group in the ACT studying the obesity problem and system effects.

Academic Highlights

PhD thesis Learning from the Past for Sustainability: Towards an Integrated Approach.
http://thesis.anu.edu.au/public/adt-ANU20050706.140605/index.html

Selected Publications

Proust, K., 2003, Ignoring the Signals: Irrigation Salinity in New South Wales, *Australia, Irrigation and Drainage*, 52:39-49.

Proust, K., 2005, Hugh McKinney: A Colonial Engineer, *Australian Journal of Irish Studies*, 5:1-18.

Fazey, I., K. Proust, B. Newell, B. Johnson and 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. [online] URL: 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.

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 and Water Australia. http://www.lwa.gov.au/downloads/publications_pdf/ER071256.pdf

Dr Carolyn Raymond

Visiting Fellow
Forest quantitative genetics, silviculture, and wood quality

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Career Brief

Currently Visiting Fellow, CPCG, Southern Cross University, Lismore NSW Previously, 21 years with CSIRO Forestry and 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 Journa*l 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 Gary Richards

Visiting Fellow
Greenhouse

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Career Brief

After completing his bachelor's degree in 1983 Gary was a founding partner in a small forest silvicultural business, later joining the ACT Parks and Conservation Service where he remained until 1991. Over this time he completed both a Graduate Diploma in Outdoor Recreation and a Master of Applied Science in Resource Management at the University of Canberra. In 1990 Gary commenced his PhD in Forestry at ANU, while also joining the ACT Planning Authority to assist in developing the legislation and administration for environmental impact assessment.

On completing his PhD in 1993 Gary joined the National Capital Planning Authority and worked as a consultant to the Department of Housing and Regional Development in developing multi-disciplinary regional planning strategies. In his time with the Authority Gary co-authored the national evaluation of the Commonwealth Government's Better Cities Program. In 1996 Gary left the Commonwealth Government to join local government, taking charge of planning for a Southern Tablelands Council.

Since 1998 Gary has been the Director and Principal Scientist for the development of Australia's National Carbon Accounting System. Gary is also an active participant with the Intergovernmental Panel on Climate Change (IPCC), recently completing a role as Coordinating Lead Author on the development of definitions and methodologies for accounting of greenhouse gases from forest degradation and devegetation of other vegetation types. Gary is currently working on the IPCC revision to international accounting guidelines for Agriculture, Land Use and Forestry.

Gary has received achievement recognition awards including a Public Service Medal for contribution to greenhouse accounting and sustainable land management, and was a member of a team that won the 2004 CSIRO Chairman's Medal.

Professional Activities

My work has primarily been around multi-disciplinary planning and policy related issues, previously heavily oriented toward the human dimensions of natural resource management. Recent work has oriented toward applications of GIS systems and remote sensing techniques for land use modeling and decision making. Specific research interests focus on the development of GIS-based carbon budget models to assess the greenhouse gas emissions implications of land use and forest management activities.

Selected Publications

Lowell, K., Richards, G.P., Woodgate, P., Jones, S. and Buxton, L. 2005. Fuzzy Clasification for Assessing the Reliability of Multi-Period Landcover Change Maps.Photogrammetric *Engineering and Remote Sensing* 71 (8) 939-945.

Richards, G.P. and Brack, C. 2004. A Continental Biomass Stock and Stock Change Estimation Approach for Australia. *Australian Forestry* 67 (4) 284-288.

Richards, G.P., and Evans D.W. 2004. Development of the FullCAM Carbon Accounting Model, (FullCAM vers. 1.0) for the Australian Continent. *Australian Forestry* 67 (4) 277-283.

Richards, G.P., and Brack, C.L. 2004. A Modelled Carbon Account for Australia's Plantation Forests. *Australian Forestry* 67 (4) 289-300.

Richards G.P., J.O. Skjemstad, R.S. Swift and W. McDonald 2003. What are the Current Impediments and Research Needs to Improving Soil Carbon Measurement. *OECD Conference on Soil Carbon Indicators* (Ottawa, 2002).

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).

Environment Institute of Australia and New Zealand, Ecological Society of Australia.

PhD (ANU), MSc (University College, London)

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.

Dr Chris Tidemann

Visiting Fellow
Wildlife ecology and conservation, conservation through sustainable use, management of feral species, animal welfare, community engagement

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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

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. 1966-2000 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

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 involved in 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.

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 schlerophyll forests of the Southeastern Highlands. In: [ANZIF]. 2007. *The 2007 Institute of Foresters of Australia and New Zealand Institute of Forestry Conference*, *Programme*, *Abstracts* and *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.

Huang, Z., Turner, B.J., Dury, S.J., Wallis, I.R. and Foley, W.J. 2004. Estimating foliage nitrogen concentration from HYMAP data using continuum removal analysis. *Remote Sensing of Environment* 93:18-29.

Dr Alan Wade

Visiting Fellow

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awade@grapevine.com.au

Career Brief

Alan Wade's activities at The Fenner School include: Supporting ANU water industry linkages within Australia; 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

Alan has held the following positions: Australian Volunteer Abroad; Secretary NHMRC Water Quality Committee; Board member of CRC for Water Quality and Treatment; Principal catchment officer ActewAGL

Professional Activities

Studies of impacts of landscape disturbances on hydrological and water quality processes and of the hydrological function of high country fens and bogs. Field and laboratory work elucidating the Holocene event, including fire history, record of the Cotter River catchment.

Academic Highlights

Investigation of the biophysical functioning and condition of Canberra's water supply catchments. Implications of study findings for $10m management program being undertaken by ACTEW Corporation to rehabilitate the lower Cotter River catchment.

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.

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.

Dr Rodney Weber

Visiting Fellow
Bushfire modelling, combustion phenomena

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Career Brief

Rod was born in Geelong and educated at North Geelong Primary School, North Geelong High School, The University of Melbourne and The University of Tasmania.

He did a short stint at University of New England as a Lecturer in Physics, then a Postdoc at UNSW at ADFA. He has been at UNSW at ADFA since 1987 and is now an Associate Professor there working on a range of problems related to the modelling of bushfires and other combustion phenomena.

Selected Publications

Gubernov, V., Mercer, G.N., Sidhu, H.S. and Weber, R.O., 2004: Evans function stability of non-adiabatic combustion waves, *Proceedings Royal Society London A* 460: 2415-2435.

Watt, S.D., Mercer, G.N., Sidhu, H.S. and Weber, R.O., 2003: The Thermal Ignition Problem in a Cube, *ANZIAM Journal* 44:C820-C835.

Dold, J.W., Weber, R.O., Thatcher, R.W. and Shah, A.A., 2003: Flame Balls with Thermally Sensitive Intermediate Kinetics, *Combust. Theory Modelling* 7:175-203.

Weber, R.O., 2001: Wildland Fire Spread Models, In E.A. Johnson and K.Miyanishi (eds) *Forest Fires*, pp.151-169, Academic Press.

Mercer, G.N. and Weber, R.O., 2001: Fire Plumes, In E.A. Johnson and K.Miyanishi (eds) *Forest Fires*, pp. 225-255, Academic Press.

Professor Patricia Werner

Visiting Fellow
Population and community ecology; interaction of fire, grazing, and exotic species; savannas, prairies and successional habitats; biogeography

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Career highlights

Prof, Michigan State Uni (until 1987); Director CSIRO Tropical Ecosystems Research Centre in Darwin; Director Environmental Biology Division, National Science Foundation, Washington DC; Adjunct Prof Charles Darwin Univ; Prof and Prof Emeritus, Uni Florida, USA

Selected Publications

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* (in press)

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 and Bowman DMJS. 2006. Environmental and allometric drivers of tree growth rates in a north Australian savanna. *J. 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.

Huffman JM and Werner PA. 2001. Restoration of Florida pine savanna: Flowering response of Lilium catesbaei to fire and roller-chopping. *Natural Areas J.* 20: 12-23.

Ambrose Andrews

Software Developer

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Career Brief

Ambrose has worked first casual and then part time in iCAM since 2003. Ambrose works with many teams of iCAM staff developing new decision support systems mostly on the ICMS platform. Ambrose also looks after the iCAM webserver and maintains various existing DSSes including WAdss and the CLAM GUI.

Piers Bairstow

Field Services Manager

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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.

John Boland

Information Services

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Career Brief

As a part of the Fenner School IT Team, John provides computing support and advice to the students, staff and visitors mainly in the Forestry precinct. John has been on campus off and on since 1982 and has spent the last 11 years providing IT services to ANU areas such as Fenner School, SRES, RSBS and the Law Faculty.

His interests include programming, computer games and music. He has three boys which fill the rest of his life.

Darren Brown

Research Assistant
Wildlife Ecology

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Career Brief

Darren joined the 'Lindenmayer team' in 2004 having previously worked as a Ranger at Booderee National Park. He is employed on the 'Jervis Bay fire response project'. Originally established as an experiment to measure the effects of prescribed burning on fauna, due to wildfire in late 2003, the project is now monitoring the response of fauna populations to wildfire.

Darren has invaluable local knowledge of the flora of the Jervis Bay region. He is responsible for the completion of regular vegetation surveys and for providing technical support for all field work undertaken by the team at Booderee National Park.

Debbie Claridge

Senior Technical Officer
Web and Design, Forest ecology and wildlife

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Career Brief

Debbie performs a range of roles within the School, including; support for teaching and research topics, especially forest ecology and wildlife; School's principal photographer; graphic design for scientific papers, posters, brochures, displays and in-house publications; and web design and development.

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 at the Sydney Technical College in order to further her interest in frogs.

Selected Publications

Trappe, J.M., Claridge, A.W., Claridge, D.L., Liddle, L. (In Press). *Desert Truffles of the Australian Outback and African Kalahari: Ecology, Ethnomycology and Diversity.*

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.

Susan Cuddy

Projects Manager

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E: susan.cuddy@anu.edu.au

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.

Selected Publications

http://www.clw.csiro.au/staff/CuddyS/publications.html

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 of Dr Geoff Cary (FSES).

Ian has developed a variety of dynamic simulation models in collaboration with other researchers from Australia and overseas. These models examine ecological systems from the perspective of populations, communities, landscapes and ecosystems. He is currently involved in a project to develop a distributed computer-grid platform for modelling multi-scale ecological systems.

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

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

Robert de Ligt

Research Assistant

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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. After a short stint in the greener pastures of the Tasmania Parks Fire Crew, he returned to the landscape fire group. Rob is working with Geoff Cary and Karen King on a landscape model incorporating simulation of fire regimes and carbon pools and fluxes in the Brindabella/Kosicuszko region. Rob is also kept busy with a second project involving the improvement of the LPJ dynamic global vegetation model for the Australian continent. Some key words/phrases to get him interested in a conversation include: mountain biking, spatial-temporal relationships of weather variables, fire history data, snow boarding, organising a wedding, ecology of any focus (fire, forest, etc), GIS, debating the merits of energy alternatives, and so on and so forth.

Lorna Fitzsimons

Technical Assistant Soil Chemistry

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Career Brief

After 12 years experience in a number of fields Lorna joined ANU as a technical assistant at the School of Resources, Environment and Society. She has a Bachelor of Applied Science. She has worked as a laboratory analyst for a stock food producer, and as a quality control officer for a major food manufacturer. Her most recent roles were with the CSIRO as a technical officer working on projects dealing with soil phosphorus.

She is responsible for ensuring that the demands for analyses of soil, water, and plant material by academics, graduates, and undergraduates are met.

Cathy Gray

Administration Assistant

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Career Brief

Cathy previously worked in administration at the Research School of Chemistry between 1980 and 1996. From 1997 and 2004 she was Executive Assistant to the Executive Director of AARNet (Australia's Academic and Research Network) and joined the administration staff at the Fenner School office in October 2005. Cathy is first point of contact at the reception counter and assists the School Administrator, Student Programs Administrator and Finance Manager.

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 Victoria University in Melbourne.

Mayumi has worked at the Australian National University since 1999. Before joining the former School of Resources, Environment and Society, now the Fenner School of 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 and Cartography

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Career Brief

After 14 years' experience in the fields of botany, forestry, ceramics, microbiology, analytical plant chemistry, plant physiology, graphic design, instructional design, web design, and as a Technical Coordinator, Clive became Faculties Cartographer in 1999.

His main field of expertise is visual communication in print media for publication - primarily cartographic and information graphics as well as photography.

Selected Publications

Information Graphics and Maps for:

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.

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 Adviser to Graduate Students

T: +61(0)2 6125 2541
E: sue.holzknecht@anu.edu.au

Career Brief

Sue has degrees in Anthropology and Sociology (UQ), Linguistics and Teaching English as a Second Language (UPNG) and a PhD in Linguistics (ANU). For 12 years Sue lectured at the Papua New Guinea University of Technology, Lae, in Language and Communication Studies. From 1993 to 1998, she worked in the ANU National Centre for Development Studies, as lecturer in Academic and Research Skills and for 3 years in the Study Skills Centre. Sue has been working in the Fenner School for 6 years as Academic Skills Advisor to graduate students.

Professional Activities

I assist graduate students to develop their skills in academic reading, writing, doing research, and giving presentations at graduate level.

Selected Academic Achievements

BA Hons Anthropology and Sociology (UQ)

Dip. TESL (UPNG)

MA Linguistics (UPNG)

PhD (ANU)

Diane Jakobasch

Administration Assistant

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Career Brief

Diane has been working for the Australian National University for the past 6 years. Her current position is Administrative Assistant, Diane is the first point of contact at reception in the Hancock building, where she assists the Executive Officer, Administration Manager and Finance Officer.

Susan Kelo

Administrator

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Career Brief

I have been working for the Australian National University for 15 years. My current position is as administrative officer for the Integrated Catchment Assessment and Management Centre in the Fenner School of Environment and Society. I ensure the routine operation of the Centre, support the Projects Manager on budgetary matters and provide administrative assistance to Professor A.J. Jakeman, some nine academic staff and about a dozen PhD students.

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 further improving the Fenner School's IT infrastructure, and research-related computer programming). 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; simplifying the administration of the Fenner School's computer servers; occasionally making the acquaintance of a thesaurus; reading on the bus; 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.

Christopher Macgregor

Senior Research Officer
Wildlife Ecology

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Career Brief

Chris is a member of the 'Lindenmayer team'. Since 2003 he has managed the 'Jervis Bay fire response project'. The project is monitoring the response of fauna populations to a wildfire which occurred in late 2003.

Chris has ten years experience in wildlife survey techniques and project management. He took on the role of managing the Central Highlands Monitoring Study from 1998 to 2001, and then both the Tumut Fragmentation and Nanangroe Projects from 2000. He has also played an integral role in the establishment of the Riverina Restoration Project. Chris continues to play a support role in these projects.

Selected Publications

Lindenmayer, D., Claridge, A., Hazell, D., Michael, D., Crane, M., MacGregor, C., and Cunningham, R. (2003). Wildlife on Farms, How to conserve native animals. CSIRO Publishing, Melbourne.

Lindenmayer, D., Crane, M., Michael, D., MacGregor, C. and Cunningham, R., Beaton, E. (2005). *Woodlands: a disappearing landscape*. CSIRO Publishing, Melbourne.

Kraaijeveld-Smit, F.J.L., Lindenmayer, D.B., Taylor, A.C., MacGregor C., Wertheim, B. (2007) Genetic structure and dispersal patterns of three sympatric small mammal species. *Oikos* (in publication)

Cunningham, R.B., Lindenmayer, D.B., Crane, C., Michael, D. and MacGregor C. (2007) Reptile and arboreal marsupial response to replanted vegetation in agricultural landscapes, *Ecological applications*, 17(2), 609-619

Damian Michael

Senior Research Officer

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Career Brief

Damian has 11 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 gained 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 14 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 on forest marsupials, has been co-principle investigator on 14 Earthwatch camps and is currently working closely with natural resource managers to implement alternative harvesting systems in the Victorian central highlands. Damian is also co-manager of a long-term research program in the south-west slopes of NSW and has had a major involvement in the long-term monitoring programs at Tumut, Nanangroe and Jervis Bay

Selected Publications

Michael, D.R. (2004) Distribution, habitat preferences and conservation status of reptiles in the Albury-Wodonga region. *The Victorian Naturalist.* 121 (5) 180-193.

Michael, D.R., Lunt, I.D. and Robinson, W.A. (2004) Enhancing fauna habitat in grazed native grasslands and woodlands: use of artificially placed log refuges by fauna. *Wildlife Research.* 31: 65-71.

Michael, D.R., Lunt, I.D. and Robinson, W.A. (2003) Terrestrial vertebrate fauna of grasslands and grassy woodlands in Terrick Terrick National Park, Northern Victoria. *The Victorian Naturalist.* 120: 164-171.

Dr Rebecca Montague-Drake

Senior Research Officer

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Career Brief

Rebecca joined David Lindenmayer's team of ecologists in 2005. She is based in Gundagai. Rebecca has a BSc. (Resource and Environmental Management) (ANU), Hons. Her PhD 'Strategic Management of Artificial Watering Points for Biodiversity Conservation' examined the impact of artificial watering points on flora and fauna in an arid national park. 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 DEC and later joining David's team and becoming involved with the South West Slopes Restoration Study and associated extension program. As part of David's team, Rebecca also assists with field surveys and associated research activities across several other projects and is currently researching the habitat requirements of select declining woodland bird species.

Selected Publications

Lindenmayer, D.B., Fischer, J., Felton, A, Montague-Drake, R., Manning, A., Simberloff, D., Youngentob, K., Saunders, D., Blomberg, S., Wilson, D., Felton, A.M., Blackmore, C., Lowe, A., and Elliott, C.P. The complementarity of single-species and ecosystem-based research - why maintaining single-species work is important. *Oikos* (in press).

Montague-Drake, R.M and Croft, D.B.C. (2004). Do Kangaroos Exhibit Water-focused Grazing Patterns in Arid New South Wales? A Case Study in Sturt National Park. *Australian Mammalogy*, 26: 87-100

Peta Moore

Administration Manager

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Career Brief

Peta has spent 17 years working in the Higher Education Industry, her most recent position an 18 month period in the Research Students Office at ANU Central Administration. She currently works as the Administration Manager in the Hancock Building, and deals with all HDR Program and Scholarship Variations, as well as Human Resources issues.

Rachel Muntz

Project Administrator

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Career Brief

Rachel carries out administrative work for Professor David Lindenmayer, learning a great deal about conservation biology and ecology as she does so.

In earlier life, Rachel 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 has ridden a bicycle from Canada to Mexico by herself.

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.

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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 Support, Programmer and GIS Consultant

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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 at Fern Hill Park in Belconnen 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.

Current duties include the day to day operation of Fenner School PCs and servers, and the management of IT finances. He also looks after the undergraduate laboratories run by The Fenner School and the management of its GIS software.

Sarah O'Callaghan

Finance Officer

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Career Brief

Since completing a BSc(Hons)/LLB in 2002 I have worked at ANU as Technical Services manager and Finance Officer

Barbara Rumball

Administrative/Executive Assistant (Part-time)

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Career Brief

Executive Assistant to Adjunct Professor Paul J Perkins (Mondays 8am-3pm and Thursdays 8am-1pm). Barbara assists Paul to keep on track with his various chairmanships, committees and interests and as a Fenner School Administrator (Tuesdays 8am-1pm and Wednesdays 8am-3pm), Barbara keeps busy managing the software and publication sales, providing the secretariat assistance for the The Fenner School Local Ethics Sub Committee while also assisting with HR matters and general office support.

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 FSES, David established The Helix magazine for CSIRO Education and Newton magazine for Australian Geographic. He has served as the Communications Manager for CSIRO Wildlife and Ecology and also produces the award winning Materials Monthly for the ANU Centre for Science and Engineering of Materials.

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.

Zosha Smith

School Administrator

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Career Brief

Zosha has a Bachelor of Arts (Modern Languages).

She has worked and lived in the Middle East, Africa and Europe. Zosha is the School Administrator.

Dr Janet Stein

Research Officer

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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 supporting the development of an ecohydrological regionalization of Australia and assisting river planning and management programs in several states and the Murray Darling Basin.

John Stein

Research Officer

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Career Brief

A forestry graduate from ANU, John returned to CRES in 1987 after some years at CSIRO modelling crop growth and climatic suitability of tree species.

His research focuses on development of methods for spatial analysis of environmental data, with application to his central area of interest, conservation of biodiversity. In particular, interpolation of elevation has required substantial efforts 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 disturbance data. 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.

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.

Paula Sutton

Research Assistant

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Career Brief

Paula finished her Bachelor of Arts in Human Ecology in 2006 before starting work as a research assistant on the Integrated Assessment of Climate Change Impacts on Urban Settlements project in 2007.

Linda van Bommel

Research assistant

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Career Brief

After completing a Master by research degree in animal ecology at Wageningen University in the Netherlands in 2005, Linda came to Australia and in 2007 started working as a research assistant in the Fenner School. In this position Linda assists Prof Brendan Mackey in a project for Bush Heritage Australia (BHA). The aim of the project is to set up an ecological framework for the land acquisition program of BHA, and to identify, within 5 key regions in Australia, the areas that meet the criteria of the framework. Linda's role within the project is to collect and analyse the spatial data needed to identify these areas.

Dr Tingbao Xu

Senior Modeller

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Career Brief

Have been actively engaged in research/development in spatio-temporal modelling, bioclimatic modelling and relevant fields since early 1980s. 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.

Working with Prof. Mike Hutchinson. Being actively involved in maintaining, upgrading and developing major bioclimatic modelling packages of the school and other modelling projects.

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. P*roceedings First Workshop on Australian AIRSAR/TOPSAR Data*, University of NSW, Sydney, Australia, October, 1995.

XU, T., Moore, I.D. and Gallant, J., 1993. Fractals, Fractal Dimensions and Landscapes -- A Review. *Geomorphology*, 8/4:245-262.

XU, T., 1991. Digital Terrain Model Study. Final Report of '7-5' National Major Program: Geographic Information Systems Research (Loess area), pp.221-240, Surveying Press, China.

XU, T., 1991. A Management System for Contour Database and Thematic-Map Database in Microcomputer Geographic Information System. Final Report of '7-5' National Major Program: Forest Remote Sensing, pp.1-33, Forestry Press, China.

Eugene Wallensky

Executive Officer, Kioloa Coastal Campus

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Career Brief

Eugene is currently responsible for administrative oversight and day-to-day management of the ANU field station at Kioloa on the south coast of NSW.

His background is in Environmental Science and he completed his Masters Degree in Coastal Geomorphology at Kioloa in 1980. Subsequently he held positions as Head Technical Officer in Biogeography and Geomorphology in the Research School of Pacific and Asian Studies before taking over as Operations Manager in the Research School of Biological Sciences. His long-term association with ANU provides him with a wide range of knowledge and contacts that enables him to carry out his present job effectively.

The focus for development of the Kioloa Coastal Campus is to provide all of the infrastructural requirements to establish the campus as a multi-faceted 'learning centre'.

Please feel free to visit Eugene and find out more about the Kioloa campus and the opportunities it can provide for you.

Selected Publications

Croke, J.C., Magee, J.M., and Wallensky, E.P. 1999. The role of the Australian Monsoon in the western catchment of Lake Eyre, central Australia during the Last Interglacial. *Quaternary International.* 57/58, 71-80.

Matsuda, S., Chappell, J.M., and Wallensky, E.P. 1995. Nonarticulated Coraline Algal Flora of present day coral reefs on Huon Peninsula. *Journal of Geography,* Tokyo, 104: 5, 719-724.

Nakomori, T., Chappell, J.M., and Wallensky, E.P. 1995. Living hermatypic coral assemblages at Huon peninsula, P.N.G. *Journal of Geography,* Tokyo, 104: 5, 743-754.

Woodroffe, C.D., McLean, R., and Wallensky, E.P. 1994. Geomorphology of the Cocos (Keeling) Islands. Chapter 4: Atoll. Research Bulletin, No. 402. 33p.

Smithers, S.G., Woodroffe, C.D., McLean, R.F. and Wallensky, E.P. 1993. Lagoonal sedimentation in the Cocos (Keeling) Islands, Indian Ocean. *Proceedings of the 7th International Coral Reef Symposium*, 1: 273-288.

Panorama of Kioloa Coastal Campus. (http://kioloa-vfa.anu.edu.au/index.html)

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 soil degradation in woodlands of eastern Australia: Quantification using biotic and abiotic indicators – with applications for NRM.

E: glen.bann@anu.edu.au

Research Description

Dryland salinity and the loss of biodiversity are among the most severe environmental challenges facing Australia. They are both high priorities on the political agenda. Yet there is surprisingly little research investigating the interaction of these two phenomena, particularly regarding terrestrial species.

My research investigates interactions between dryland salinity, regolith and terrestrial biodiversity in yellow box and red gum grassy woodlands. As the problem is multifaceted and complex, a holistic, multidisciplinary approach was 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. This information will be useful for management activities.

Results to date indicate that in these upland landscapes, dryland salinity;

1) is very localised and is not expanding at a dramatic rate as currently promoted,

2) is caused by soil degradation processes subsequent to over-grazing, clearing and conventional cropping practices,

3) does not necessarily adversely affect terrestrial biodiversity in these woodlands as endemic fauna and flora species appear relatively salt-tolerant.

4) can be mitigated and remediated with native species after appropriate soil treatment and stock management

Liliana Baskorowati

PhD Scholar
Reproductive Biology of *Melaleuca alternifolia* and Implications for Breeding

E: liliana.baskorowati@anu.edu.au

Research Description

Melaleuca alternifolia is the principal commercial source of Australian tea tree oil. *M. alternifolia* occurs in three main chemical varieties (chemotypes); rich in either 1,8-cineole, terpinolene or terpinen-4-ol. The latter is the variety that has undergone most commercial development. Hence, the importance of breeding for increased yields and higher oil qualities to improve production efficiencies and marketability of the oil.

A breeding program to improve the yield and quantity of foliar oils from plantations of *Melaleuca alternifolia* in Australian commenced in 1993.

The principal objectives of this study are to gain a better understanding of the reproductive biology of this species. The present study complements the Australian *M. alternifolia* breeding program implemented by NSW Agriculture and CSIRO (Doran et al., 2002). For any tree genetic improvement program, knowledge and manipulation of the reproductive biology of *M. alternifolia* are essential to the design and implementation of the genetic improvement program.

Jie-Lian Beh

PhD Scholar
Development of a spatial soil model for the pine forest estate in Tumut, NSW

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Research Description

Forest soils information is critical to forest management for maximising site specific productivity and minimising forest operation impacts. There is currently limited detailed soils information available for the effective management of the heterogeneous forest estate, signalling a clear need to develop methods for predicting forest soil properties over a range of scales. The aim of this research project is to develop a methodology to derive spatial soil models that will predict key soil properties influencing plantation forest management. Such a method will improve the ability to minimise environmental damage while working in forest environments and improve prediction and forecasting for strategic and operational planning.

Study sites will be three distinct geomorphic forest landscapes in the southern Hume region of NSW: Carabost, Buccleuch, and Bago State Forests. The spatial soil models will be developed using a combination of already available environmental coverages of the study areas derived from digital elevation models (DEMs), terrain analysis, digital climatic surfaces, gamma radiometric remote sensing, and multi-spectral remote sensing. Phase 1 of the project will involve statistical correlation of variables to detect trends.

Falguni Biswas

PhD Scholar
Ground and surface water salinity

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Research Description

Surface-Groundwater Interactions in the Upper Hunter River under changing climate

Salinity in soil, groundwater and river systems are now a serious problem in many parts of Australia, and the problem is increasing. Salinity increases are usually caused by a rise in the level of ground water-table bringing naturally occurring salt to the surface. Salinity occurs naturally in many soils and streams in the Wybong catchment of the Hunter Valley of New South Wales due to its geological features. The Permian geology of the Hunter Valley has been deposited during marine at fresh water phases. Salt which is partially dissolved in the groundwater is transferred into the Valley's streams and rivers. Therefore, a number of issues can be considered for causing the salinity in that region. Aims of this study are to model water and salt balance, surface-groundwater interaction and rate of groundwater discharge in the Wybong catchment of the Hunter valley. This modelling also includes assessment of spatio-temporal trends in salinity and groundwater discharge under the past 50 years of changing climate. Increasing stream salinities in this catchment could also be due to mineral weathering.

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

E: lara.boyd@anu.edu.au

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. This project will construct a new method for measuring vegetation condition in the Mallee that was developed based on these analyses.

Matthew Brookhouse

PhD Scholar
Dendrochronological reconnaissance of eucalypts in southeast Australia.

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Research Description

Eucalypt tree-rings are a valuable natural repository of climatic data. However, the belief that eucalypts lack dendroclimatological potential has stifled eucalypt tree-ring research. However, an emerging body of dendrochronological literature indicates that climatic data may be extracted from eucalypt tree-rings. This potential remains unrealised.

To date, most dendroclimatological studies have focused upon one species, Eucalyptus pauciflora. Sampling strategies in these studies have ignored fundamental principles of limiting factors, ecological sensitivity and replication. In addition statistical considerations such as sample size requirements, intra/inter-sample correlation and spatial and temporal dependence of environmental sensitivity within individual tree-ring series have not been examined.

This thesis addresses these issues and investigates the potential of eucalypt tree-ring data for climatology. The study uses established data- and sample-sets collected by the Department of Sustainability and Environment and previous ANU students and researchers to examine of the potential role of species and site selection on dendroclimatic signals preserved within eucalypt tree-ring series'.

Kylie Carman-Brown

PhD Scholar
Losing the Lakes: An Environmental History of the Gippsland Lakes Catchment, Victoria, Australia from 1838-1914

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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 precipitation, flow, filtration and evaporation. 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).

Melissa Burgess

PhD Scholar
Spatio-temporal patterns of avoidance in Kings Cross: An exploration of the environmental cues that trigger Fear of Crime

E: melissa.burgess@anu.edu.au

Research Description

Regardless of whether crime is present, people avoid areas where they feel afraid of becoming a victim of crime. With the widespread adoption of this response, fear of crime has emerged as a distinct phenomenon that can cause numerous problems for the community. Research into the geography of avoidance, can potentially provide information used to reduce public fear of crime and curb the negative consequences that result. For example, it can allow police and government resources to be targeted to fear hotspots and toward specific environmental cues that trigger fear of crime.

My research provides a spatio-temporal investigation into fear of crime.

I use GIS to produce fear maps showing the avoidance patterns adopted by people who fear being robbed, beaten or attacked in Kings Cross. The maps allow an exploration of avoidance triggered by different environmental cues. A number of social environmental cues are mapped, including the presence of 'junkies', intoxicated persons, prostitutes, gangs and loitering people. Physical environmental cues area also mapped, including the presence of poor street lighting, vandalism, rubbish or syringes and laneways. The patterns of avoidance adopted by different socio-demographic groups in response to these environmental cues are additionally examined for selected environmental cues.

Leonardo Carroll

PhD Scholar
Water and Catchment Planning: Incorporating Demography and Population

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Research Description

I am investigating how demographic and population issues could be better incorporated into catchment management planning. My research will (i) assess the institutional framework for, and interactions between, key stakeholders including natural resource managers, land use planners, and research organisations; (ii) seek to understand and document existing and potential methods for use of demographic data, by natural resource managers and land use planners; and (iii) identify possible capacity building initiatives, which would help natural resource managers and land use planners to effectively use demographic data and factor population change into their planning processes.

To inform my research, consultations will be held with key stakeholders at Commonwealth, State/Territory, regional and local levels, as well as with research organisations and private enterprise. At the regional and local level, the study will focus on a small number of catchments in New South Wales, Victoria and/or Queensland, to be confirmed in late 2007.

Serena Chen

Phd Scholar
Ecological Modelling

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Research Description

My research involves developing Bayesian network models for predicting the ecological health of river systems. Fish assemblages will be used as indicators of ecological health. The models will be based on selected sub-catchments in the Murray Darling Basin. The research will establish the important catchment and in-stream processes that affect fish habitat, and thus fish abundance and diversity. The influence of spatial and temporal scales will also be considered.

The purpose of the models is to assist resource managers in the catchment management process by providing a means to identify key risks to ecological health. Various system changes, including management strategies, modifications in flow regime and climate change can be tested by running scenarios, and examining the predicted outcome on the indicators of ecological health. Resource managers will be able to effectively prioritise management actions based on sound understanding of the mechanisms through which physical and chemical factors influence stream ecosystems.

Stuart Cooke

PhD Scholar
Ecological Humanities

E: stuart.cooke@anu.edu.au

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 places up 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 missed 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 sense of responsibility for it.

Katherine Daniell

PhD Scholar
Investigating participatory modelling for decision aiding in water planning and management

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Research Description

Water planning and management are faced with increasing levels of uncertainty, complexity and conflict. Multiple decision makers and managers, legislative requirements, competing interests, resource scarcity and uncertainties about the future in a more connected and rapidly changing world, are drivers for the need to develop improved approaches to aid decision making in the water sector. This case study-based research aims to contribute to this need by focussing on the development, implementation and evaluation of methods to aid collective water related decision making for communities, policy makers, managers, and technical experts. The research is interdisciplinary and integrative, drawing on theory and practice from water engineering, natural resources management, decision aiding, participatory methods and modelling, learning and knowledge creation, planning theories and evaluation. The two case study applications of this work are: the creation of the Lower Hawkesbury Estuary Management Plan, a regional planning project funded by the Hornsby Shire Council in NSW, Australia; and a participatory risk management process, 'living with floods and droughts', in the Sofia region of Bulgaria, funded by the European AquaStress Project. The cotutelle PhD is principally funded by the General Sir John Monash Foundation and further supported by ANU/CSIRO (Australia) and Cemagref/AgroParisTech (France).

John Dore

PhD Scholar
Deliberative Mekong Water Politics

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Research Description

Whilst it may be true to say that 'to a certain extent, all regions are imagined', the Mekong 'region' is increasingly becoming a reality.

This research is exploring the practice and potential of deliberative processes to improve transnational water governance in the region which is is taken to encompass the territory, ecosystems, people, economies and politics of Cambodia, Lao PDR, Myanmar, Thailand, Vietnam, and two provinces in southern China.

Particular attention is paid to the roles of Mekong River Commission, Asian Development Bank, The World Bank, The World Conservation Union (IUCN), and the M-POWER governance network by process-tracing their involvements in recent water politics.

The purpose of this thesis is two-fold. First, devise and demonstrate the application of a normative and explanatory framework which aids an understanding of regional governance, in this case, of water in the Mekong Region. Second, contribute to the improvement of governance in the region by providing a critical political analysis of an inter-related set of significant water and water-related governance processes.

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.

Steve Douglas

PhD Scholar
Are 'greened' religions the answer to the ecological crisis? A case study of mainstream religion in Australia.

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Research Description

The research tests the assertion that 'greened' religions are a major part of the solution to the ecological crisis because they are the only cultural vehicles that can drive the necessarily radical personal and societal changes. My case study is the 3 largest Christian denominations in Australia. Their ecological policies and practices are primarily researched using the Internet, supplemented by information from parties involved in policy-making and implementation.

Most of the proponents of the notion that 'greened' religion is the answer to the ecocrisis are other than Australian. When the proposition is tested in Australia, I find that the 3 largest Churches are undergoing an 'ecological conversion' and have produced ecological policies. However, implementation is very patchy, very recent, and is best developed at the fringes of the institutions. Despite the rhetoric, the evidence indicates that the Churches have not made ecological concerns 'core business' at an institutional level.

John Drewry

PhD Scholar
Nutrient generation in Australian catchments: land use and management factors affecting water quality

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Research Description

Within catchments the loss of sediment and nutrients is known to decrease the quality of surface waters. While working with Lachlan Newham, Richard Greene, Barry Croke and Tony Jakeman, my research is focusing on improved catchment scale model simulation of impacts of current and future land management in the Moruya and Tuross coastal catchments in NSW. To assess loads and enable management of sustainable practices within these catchments, the catchment model (CatchMODS) is linked with a field data program, as there is little information on the quality of storm water entering the estuaries. Previously, I worked as a soil scientist with AgResearch Ltd in New Zealand, researching the effects of sheep, deer and dairy cattle treading on soil physical properties, and agricultural related environmental issues.

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. 2006: Natural recovery of soil physical properties from treading damage of pastoral soils in New Zealand and Australia: a review. Agriculture, Ecosystems and Environment 114: 159–169.

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 landscapes, 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.

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* (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* 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* 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.

Sue Feary

PhD Scholar
The Role of Forestry in achieving Equality for Indigenous Australians

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Research Description

Aboriginal people across much of Australia have had an association with forests that goes back for millennia. Traditional use of forests was for food, raw materials for artefacts and shelter and for medicines. There is an extensive ethnographic literature pertaining to management of forests through periodic burning although the extent to which it occurred is contested. Contemporary communities retain links with forests through co-management arrangements with conservation agencies and involvement with state forestry departments in undertaking pre-logging surveys for cultural heritage. In some parts of Australia traditional knowledge of forest ecosystems and customary practices can complement western scientifically based land management techniques.

A recent initiative of the Commonwealth government, was to develop a national Indigenous Forestry Strategy (NIFS) to identify programmes that have 'caring for country' components and are community, rather than individually based.

The focus of the strategy is to build on the desire of Aboriginal people to play a more active role in natural resource management, by facilitating partnerships between forestry industry enterprises and Indigenous communities. Opportunities for both wood eg plantations and non-wood e.g. bush tucker enterprises are examined.

In partnership with ANU, DAFF and ATSIC are also funding this PhD research. This research will critically evaluate the development and implementation of NIFS through several case studies where Indigenous communities and industry have established joint ventures that are or have the capacity to bring social, economic and environmental benefits to both communities and industry. Strategy implementation success will be measured through performance indicators developed in consultation with the joint partners.

Baihua Fu

PhD Scholar
An integrated approach identifying suspended sediment sources at catchment scales

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Research Description

Information on suspended sediment sources is important to prioritise erosion control. However, identifying sediment sources at catchment scales is challenging given the complex processes of sediment mobilisation, transport and deposition. Techniques to identify suspended sediment sources include: monitoring, tracing, and modelling. This project integrates these techniques to understand better the sources of suspended sediment. The aims of the project are to:

1) improve the understanding of the capability and reliability of sediment tracing techniques and their application to Australian coastal catchments;

2) apply and modify a GIS-based catchment-scale road erosion and sediment transport model. This model will be used with a sediment budget model (CatchMODS) to quantify sediment yields from different erosion sources.

3) better understand catchment-scale suspended sediment dynamics in spatial and temporal terms using a combination of information from monitoring, tracing, and modelling.

The research is being undertaken in the Moruya-Deua and Tuross River catchments, on the southeast coast of NSW. The research forms part of a larger project on water quality assessment for the Eurobodalla Shire Council and the Department of Environment and Climate Change.

Nicholas Gellie

MPhil Scholar
Landscape Susceptibility to Severe Drought, Fire, and Storm

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Research Description

Two key research questions betng 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 (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.

Sarah Goldin

PhD Scholar
The nature and function of log microenvironments in Yellow Box (Eucalyptus melliodora) – Red Gum (Eucalyptus blakelyi) woodlands

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Research Description

Yellow Box– Red Gum woodlands were once widespread in temperate south eastern tablelands and slopes of Australia. Since European settlement this region has been extensively cleared for grazing and agriculture. An important component of these woodland systems is the presence of coarse woody debris (CWD). CWD is generally considered as dead woody material on the forest floor, including logs, snags and large branches. It is well established that CWD is an important component of energy flow and nutrient cycling in forest ecosystems. Logs are a key constituent of CWD and are suggested to provide many ecosystem services. There is little known about log microenvironments and their relationship to ecosystem function, especially in the Australian context. The aim of this project is to quantify how logs influence the microenvironment in endangered Yellow Box – Red Gum woodlands, and to use this information to better understand the ecological function of logs in these systems. This will be particularly useful for current woodland restoration initiatives.

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 woodlands from the regional landscape.

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.

Quintin Gravatt

PhD Scholar
Phosphorus management in Oxisols using cover crops and organic acids

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Research Description

The aim of this project is to develop cover crop practices for the heavily fertilised potato cropping soils of the Robertson district that will minimise erosion and runoff of water, potentially rich in phosphorus (P), thereby resulting in significant improvements in the environmental management of this sensitive catchment area. The cover crops will improve infiltration, decrease erosion, and off-site transport of P and increase access to accumulated soil P, making it available to a subsequent potato crop, thus decreasing the P loading of the soil.

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.

Van Chieu Hoang

PhD Scholar
Cooperation between protected area authorities and local stakeholders in 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 widely in the protected area management. In such situation, by studying three categories of protected areas (National Parks, Natural Reserves, and Historical and Cultural Heritage Sites) in northern Vietnam, this research aims to develop effective approaches of co-management between protected area authorities and local stakeholders in management of protected areas in order to gain the balance between conservation objectives and local people's needs.

Cameron Holley

PhD Scholar
Governance, the environment and mobilizing local knowledge and capacity

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Research Description

In the last three decades the regulation of environmental and natural resource problems (ENRPs) has shifted from a top-down state-delivered activity to one involving 'webs', 'networks' and 'collaborations'.

Both internationally and nationally, governments have been actively experimenting with this new way of governing ENRPs and have implemented a variety of on ground experiments that differ institutionally and spatially. But will these experiments 'work', and if so how? How can accountability and democratic legitimacy be effectively maintained in processes where local and regulated interests are often the main decision makers and implementers?

The answers to such questions remain uncertain, not least because existing regulatory and governance theory has yet to come to terms with these collaborative experiments. Accordingly, this project seeks to (i) advance our understanding of what this new form of collaborative governance involves; and (ii) provide insights for theory and practice regarding the above questions so as to guide the development of future collaborative initiatives.

To achieve these goals this project seeks to examine and draw critical distinctions and comparative lessons between the following Australian experiments in collaborative governance:

- Environment Improvement Programs
- Neighbourhood Environment Improvement Programs
- Regional Natural Resource Management Initiatives

Kevin Jeanes

Ph.D. Scholar
Natural Forest Loss, Land Use Change and Impact upon River Flow Regimes and Limnology of the 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). Thirdly, it will explore the impact of these changes on the limnology of a receiving freshwater lake (Lake Singkarak).

The doctoral research is currently carried out under guidance of the Integrated Catchment Assessment and Management Centre, ANU, 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 a Miscellaneous Scholarship award by SRES, has supported the research since Year 2 of the program.

Stuart Johnston

PhD Scholar
Soil characteristics and processes critical to the sustainability of alpine grasslands

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Research Description

The tall alpine herb field community in the alpine area of Kosciuszko National Park NSW, is a limited and biologically significant climatic climax ecosystem. However, past grazing practices and the current impacts of tourism, exacerbated by the harsh climate, have resulted in extensive vegetation degradation and subsequent soil erosion of the alpine humus soils. These phenomena have occurred over large areas of the tall alpine herb fields. These disturbances have also produced ecosystem states different from that of the natural climax state. The objective of this study is to provide a framework for determining the soil and vegetation characteristics and processes, which determine the inherent ecological stability of alpine herb fields. From this, a state transition model for alpine herb field ecosystems is to be developed to help in the understanding of ecosystem function and help management.

Stefan Kaufman

PhD Scholar
The roles of reflexivity in intentional social change for sustainability

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Research Description

Supervisors: Valerie Brown, Rob Dyball.

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.

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.

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 the 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 both in intensity in traditional locations, involving environmental and social/cultural impacts, as well as 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.

Adam Leavesley

PhD Scholar
The response of birds to the fire regimes of central Australian mulga woodlands.

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Research Description

Within the arid zone, mulga (Acacia aneura) supports a rich bird fauna. Mulga grows in large continuous stands and in patches that are interspersed with other plant communities in an intergrove pattern. Fire-prone spinifex (Triodia spp.) hummock grasslands are thought to influence the distribution of mulga which can be killed by fires which scorch the canopy – i.e. of moderate intensity or greater. Little is known about the way birds respond to the spatial distribution of mulga in the landscape, or the fire regimes associated with mulga.

Unreplicated evidence from a study of the birds of Uluru - Kata Tjuta N.P. suggests that fire influences the species composition, richness and abundance of birds in mulga. I intend to formally demonstrate how the common mulga species respond to the fire regimes of mulga woodland.

Alex Lee

PhD Scholar
Utilising airborne scanning laser (LiDAR) to improve the estimation of Australian forest structure and 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 ultimate purpose of conserving the largest temperate woodland in the world, I will use remotely sensed data to relate bird diversity, abundance and distribution to vegetation-based habitat characteristics in my thesis. In southern Western Australia, there remains around 12 million hectares of continuous temperate woodland, located to the west of the Nullarbor Plain and east of the Wheatbelt. The structure and productivity of woodlands strongly affect bird habitats. So, remotely sensed data can provide possible source of land cover maps to efficiently analyse its structures. By combining satelliteborne LiDAR data for vertical structure with several passive satellite imageries for patterning, it is possible to gain a novel understanding of the regions' three dimensional woodland structure. The chief aims are (1) to develop a methodology for identifying bird habitat resources in woodlands from remotely sensed data, and (2) to predict bird species diversity, abundance and distribution.

Peter Lezaich

MPhil 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.

A study region in north eastern Tasmania has been selected as it has an active plantation sector, a variety of agricultural industries and mixture of different sized local communities.

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 what are their conservation goals, and what role Aboriginal people may have in mainstream conservation, and what it might become is a key question 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.

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
Constructing nature in rural Australia: Environmental history of the Bogan-Macquarie region, 1901 to present

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Research Description

My thesis is an environmental history of the Bogan-Macquarie sub-region of the Darling Riverine Plains, or roughly Dubbo to Bourke, from 1901 to the present. It combines material, cultural and political approaches to environmental history and examines local and universal knowledge systems in their wider cultural and historical context.

In 1901 the destructive impact that farming practices were having in the far west of New South Wales was officially acknowledged by a Royal Commission; since then, natural resource use in the Western Division has remained regulated under a different administrative and title arrangement to that of the rest of the state. The Bogan-Macquarie region falls across this administrative line. Selecting this area for study allows for a local environmental history that can compare diverse ecologies, perspectives and natural resource use along uncontrolled and controlled river systems, and across leasehold and freehold title frameworks. The thesis will seek a balance between local histories and the wider forces that intersect them, between contextual difference and holistic synthesis.

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 decision, including decision 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 the country has. Although critical, 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 the various aspects of PNG land owner decision making processes, by posing the question ' What are the key aspects of PNG landowners decision making in the farming system that are relevant to grow commercially valuable tree?' Within this broad research question, the study in making specific references to decision to grow commercially valuable trees by asking the following subsidiary questions; how do PNG land owners make land use decision, and 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 decision making process can assist and contribute in planning and management process that 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 three selected communities at Mari, Waffa and OK Tedi areas of Madang, Morobe and Western Provinces respectively, in PNG.

Nicola Munro

PhD Scholar
The faunal use 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 elements 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, and the inclusion of ground cover elements such as logs, rocks, and tussock grasses. 'Best-practice' revegetation which includes some of these elements 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 for their habitat value for birds and arboreal marsupials.

The primary aim of this study is to assess the response of birds and arboreal mammals to revegetation plantings differing in understorey complexity. The study will also assess the related effects of patch size, vegetation cover and isolation of revegetation patches on fauna. I will compare 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, 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 (organic fibres and personal products) and tested and contested with emerging peri-agricultural extensions including organic water and certified organic forestry. Scenarios for the future of organics are examined.

Luciana 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 will use a remote-sensing based methodology for estimating the regional impacts of human developments on ecosystems structure and function. The specific objectives include to describe land use/ land cover patterns in the Australian Capital Territory and surrounding region ('ACT/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

MPhil 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.

Ida Aju (Daju) Resosudarmo

PhD Scholar
Between Development, People, and Forests: Local Government Decision Making under Decentralization. Case Study of Two Districts in Kalimantan, Indonesia.

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Research Description

Many countries around the world are devolving political, fiscal, and administrative powers to sub-national governments; at least sixty countries have embarked on some kind of decentralized control over a natural resource or forest. However, so far, there is limited evidence that decentralization has benefited forests and the people who depend on them.

This research examines the outcomes of Indonesia's recent decentralization process in the context of forest use and management. It will observe the dynamics of forestry and forestry-related decision making processes and their implementation. It will explore elements such as the actors and their roles, locus and distribution of power, and accountability mechanisms. Research will involve investigation at the national, sub-national, and local levels.

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.

Jacqui Russell

PhD Scholar
Human Ecology: A proposal for a critical systems approach for a conceptual framework

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Research Description

There is growing consensus that many of the complex environmental problems with which we are faced are linked to the ways in which humans interact with their environments. While human ecology is often described as being the study of the interactions between humans, their culture and their environments, to date, it has not only lacked a philosophical framework that has the capacity to support, guide and legitimise the work of human ecologists, but also lacked the capacity to comprehend the ways in which maladaptive cultures have been created and are perpetuated. In order to redress these shortcomings of human ecology, I propose a new methodological framework that would combine the understandings of human ecology with those of the critical social sciences and critical systems thinking. The thesis examines the nature of knowledge systems in general before proceeding to a particular focus upon the possibility of developing a transdisciplinary scientific knowledge system that is oriented by the values of ecological sustainability and social justice. The framework and understandings that are developed also have implications for the emerging field of sustainability science.

This thesis has been examined with graduation pending

Debbie Saunders

PhD Scholar
Ecology and conservation of the endangered, migratory Swift Parrot

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Research Description

The endangered Swift Parrot migrates north from Tasmania to south-eastern mainland Australia in search of suitable winter food resources. My research examines the dynamic use of winter foraging habitats by the Swift Parrot at various spatial and temporal scales throughout its wintering range, and the implications for conservation. Swift Parrots used a diversity of winter foraging habitats in coastal and/or western slopes areas each year although their abundance fluctuated significantly between years and regions. This research provides the first demonstration of coastal areas providing important drought refuge habitats, and highlights the importance of site fidelity for this species. With much of the current knowledge about migratory birds based on research within the Palearctic and Nearctic migration systems, this research also provides valuable insights into the austral migration system of Australia.

Birte Schöttker

PhD Scholar
Remote Sensing in Coastal Catchments to Improve Water Quality Monitoring and Modelling

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Research Description

Terrestrial discharges of rivers draining to the Great Barrier Reef (GBR) lagoon pose a significant risk to the health and quality of a unique iconic, ecologically and socially relevant ecosystem.

I investigate the potential of remote sensing to provide synoptic information on factors that drive the erosion through water. My research area lies in the Burdekin River catchment in Queensland, considered a 'hot spot' of hillslope erosion, sediment and nutrient loss. The region is under increasing land use pressure facing the key natural resource management issues water quality, land degradation, and habitat and biodiversity loss. The development of more reliable, spatio-temporally variable cover estimates and their incorporation in water quality/hillslope erosion models is highly relevant to the GBR Water Quality Protection Plan and the State Rural Leasehold Land Strategy.

Modelling scenarios and local studies show that altering ground cover impacts sediment/nutrient yields. I use multisensoral remotely sensed information on land condition, vegetation presence and health and soil moisture to improve the cover- and soil-erosivity-factor in empirical hillslope erosion modelling. Temporally finer information on vegetation cover I derived so far represents well its variability and shows potential to inform event-soil-loss modelling, supplement conventional erosion modelling and support water quality management on larger scales.

Kate Sherren

PhD Scholar
Sustainability bound? A study of interdisciplinarity in universities

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Research Description

The United Nations declared 2005-2014 to be the Decade of Education for Sustainable Development. This agenda is being implemented enthusiastically in university facilities management and operations, and research in sustainability is increasingly common, but tertiary curriculum has not experienced a similar push. This thesis undertook to explore the expressions of sustainability in the academic activities of universities, and determine what sort of change (if any) was appropriate.

A range of methods was used to explore patterns and theory adaptively in this broad, exploratory study, including; participant observation, interviews, content analysis, questionnaires, social network analysis, bibliometrics, and clustering. This range of approaches embraced the diversity of academic career roles, motivations and pressures, rather than isolating only the teaching element. The study also considered sustainability to result from the aggregate student experience, rather than focusing on designing a core 'sustainability' subject, or taking the normative position that all individual units must be transformed to make progress.

Cases were investigated at seven Canadian universities, and two Australian ones. The latter involved mapping research and research training collaborations and following curriculum development and structural redesigns around sustainability. The work has raised as many questions as answers, suggesting many intriguing future research opportunities.

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 salinity in the upper Hunter Valley, New South Wales.

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Research Description

This project investigates the source of salinity in stream water in the upper Hunter Valley of the northern Sydney Basin characterised by sandstones, conglomerates, shales and coal bearing sediments. The major industries in the Hunter comprise extensive coal mining, wine production, horse breeding, horticulture, and grazing. All these industries have competing demands for water resources and sustained extraction of groundwater from alluvial aquifers poses a threat to the ecological function of the hyporheic zone, to water flows and to stream health. Replacement of deep rooted native trees with shallow rooted pasture and crops has been widely 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 presumed to be of meteoric origin from atmospherically advected sea salt accumulated in recharge. One hypothesis being tested is that mineral weathering of underlying coal measures is a significant source of salinity in surface waters in the upper Hunter Valley.

Phil Townsend

PhD Scholar
Policy options for an internationally competitive forest plantation sector in Australia

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Research Description

Australia's plantation estate has expanded over the last 140 years in direct response to the policies adopted by State and Federal Governments. Between 1997 and 2007, the area of plantations has grown from 1 million to 1.8 million hectares and questions exist regarding the future expansion of the national plantation estate. This research is directed at identifying those components of the economic framework which underpin plantation investment and assessing whether the current fiscal policy settings are appropriate for stimulating, impeding or distorting plantation investment decisions. The main policy areas to be considered are taxation, water allocations and entitlements, financing of public infrastructure, and the markets for environmental services. Alternative policy approaches will be presented where the current policies are found to either impede or distort investment decisions. Case studies for the policy analysis will be based on plantation developments in southeast South Australia and the southwest slopes of New South Wales.

Ha Thi Thu Tran

PhD Scholar
The impacts of the renovation policies on communities and forest land management in the northern mountainous region of Vietnam'

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Research Description

In the late 1980s and early 1990s, the Vietnamese Government shifted from a subsidised central economy to a market economy, and transferred land use rights from the state to users through implementing 'Renovation Policies' (Doi moi). The government expected that by increasing local income based on forestry activities, deforestation would be stopped and forest and forest land would be managed sustainably. My research asks the question: 'How have Renovation Policies affected sustainable forest and forest land management in the northern mountainous region of Vietnam?' The research was carried out using six case studies following a transect representative of the physical geography of the northern upland region, in three different provinces (Cao Bang, Bac Kan and Thai Nguyen) each with a different forest type. The research explores how forest cover and quality have changed and investigates relationships among key socio-economic indicators such as income, food security and measure of equity (between family, households, genders) since the 1990s in each case study.

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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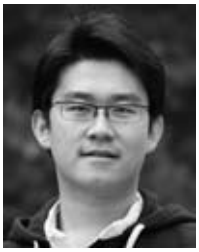
Research Description

The ability to resprout and fire-stimulated seed regeneration are regarded as critical traits allowing plant populations 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 aims to investigate variation in fire response traits in plant communities across an altitudinal gradient in the Australian Alps region, and the relative importance of the fire regime in driving this variation. Initial results indicate significant variation in the proportion of species with different traits across the study area, particularly in rocky outcrop habitats and in response to the average inter-fire interval. However, there are also complex relationships between fire history, habitat, biomass and resource gradients including temperature and precipitation. Thus the fire regime may be indirectly influencing the distribution of traits through relationships with other factors. Understanding these relationships will assist in elucidating the causal factors and processes driving the distribution of plant traits. This 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.

Lin Wang



PhD Scholar
A comparative study of Holocene environmental archaeology 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 region 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 of 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 areas will be selected to do a comparison study. Their different responses to climate change will provide a possible understanding of ancient humman-land relationship and explanation of the continuity of Chinese civilization. Furthermore, this study may provide evidence on the evolution of subsistence strategy from a spatial point of view and contribute to the study of ancient vegetation surroundings in different regions of northern China.

To make use of the survey data effectively and link climatic information with archaeological data quantitatively, a series of scientific methods involving site catchment analysis, spatial cluster analysis and population size evaluation. will be utilized. 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.

Robert Waterworth

PhD Scholar
Dynamics of stem growth and form in Pinus radiata (D.Don) under contrasting water and N 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 Forestry and Forest Products. Funding from the CRC for Greenhouse Accounting is gratefully acknowledged.

Eddie Webber

PhD Scholar
Coarse Woody Debris Decomposition, Carbon Sequestration, and Management, in Eastern Australian Forests.

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Research Description

This study is concerned with the decomposition dynamics of decomposing logs lying on the forest floor (known as coarse woody debris; CWD), and the impact this has on carbon sequestration and CWD management. Wet eucalypt forest (New South Wales and Tasmania), eucalypt woodland (central Queensland), and tropical rainforest (far north Queensland) were studied.

Eucalypts from wet forests studied exhibited the slowest decomposition rates known for angiosperms. The NSW and Tasmanian CWD had comparable decomposition rates. The relatively undisturbed forests of southern Tasmania had the highest accumulation of CWD for any forest ecosystem reported anywhere. FNQ tropical-rainforest CWD decomposed the fastest, and decays at a rate comparable to other tropical rainforest ecosystems elsewhere. Central Queensland CWD decomposition was so slow that a decomposition-rate couldn't be established.

Modelling of Tasmanian eucalypt tree-growth and CWD-decay shows inclusion of CWD in carbon accounting can provide an increase up to 40 per cent of the long-term carbon that is stored in living trees.

If change can be made to the current practice of excluding CWD from carbon trading, then managers of nature parks and reserves, where wood clearing has occurred in the past, may be able to increase their potential income by including CWD-carbon in their tradeable-carbon stocks.

Jessica Weir

PhD Scholar
Cultural flows: negotiating water with traditional owners from along the Murray River

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Research Description

The ecological devastation of the Murray River and its tributaries has created a heightened awareness of different peoples' interests in the rivers, and brought them into competing and aligning discourses. This thesis engages with how traditional owners argue for their interests in the management of water in the Murray-Darling Basin. In particular:

how traditional owners express their relationships with water in a legal, policy and management context which would otherwise separate nature and culture, and the implications of this context for their water rights;

the implications of the ecological devastation for the traditional owners, and their organisational and conceptual arguments which engage with ecological restoration as a meaningful part of their aspirations for country.

The project is supported by a research agreement with the Murray Lower Darling Rivers Indigenous Nations. MLDRIN are a federation of ten traditional owners whose country is in the southern part of the Murray-Darling Basin.

Martin Westgate

PhD Scholar
Modelling of Climate Change Effects on Frogs at Booderee National Park, Jervis Bay

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Research Description

The effects of climate change on biodiversity are expected to be strongly detrimental in most cases, however prediction of the precise nature of such effects is difficult. Amphibians are expected to be particularly at risk, yet previous research has failed to provide sufficient detail for active conservation. To address this problem, this study will investigate certain key vectors by which climate could affect frog populations, within Booderee National Park, Jervis Bay Territory. Climate Change may affect frog reproduction (by reducing the number of days available for breeding or survival of juveniles) or habitat (by causing changes in vegetation composition/structure, altered fire frequency/intensity, or reduced availability of water), both of which affect long-term population viability at a site. By quantifying optimal requirements for a range of frog species in terms of habitat and conditions for reproduction, it should be possible to create models of climate change effects on those species.

Vanessa Wong

PhD Scholar
The effect of salinity and sodicity on soil carbon stocks and fluxes

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Research Description

This project aims to determine how increasing salinity and sodicity affects soil carbon stocks and fluxes, and the extent of hysteresis these systems exhibit upon rehabilitation. The soil organic carbon pool is the world's largest terrestrial carbon sink, with interest rising in the effects of land use practices in mitigating carbon dioxide emissions. Saline soils were estimated to cover over 5.5 million ha within Australia in 2000, while sodic soils were estimated to cover 74 million ha, both of which are predicted to increase in the future. Increases in both salinity and sodicity can lead to a decline in vegetation health and plant biomass production, and in extreme cases, result in the complete loss of vegetation and the development of salt scalds, which become increasingly susceptible to soil erosion. Because the amount of carbon present in the soil is dependent on inputs and losses, increasing salinity and sodicity levels have the potential to decrease carbon inputs into the soil from declining vegetation health and increasing erosion, in addition to altering soil physical and chemical properties which would subsequently impact upon nutrient cycling and biotic activity. Therefore any change in management regime, both in the degradation and rehabilitation processes, has the potential to affect the carbon flux in the landscape.

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.

Follow 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 redistributing the material downslope and into the Cotter River. From here, the material could be transported further downstream to the water supply reservoirs.

This single concatenation of events led to 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 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://cres.anu.edu.au/dbl/tumutstudy.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.

Muhammad Arshad

Master in Environmental Science Scholar
An Investigation of Causes and Contributing Factors of Land Degradation Process in Pakistan.

E: muhammad.arshad@anu.edu.au

Research Description

As a core component of my Master's degree in Environmental Science, the major research essay aims to investigate the causal relationship between the incidence of rural poverty and land degradation processes in Pakistan. Agriculture sector in Pakistan is experiencing a declining productivity since the early 1990s due to sever land degradation problems. In the last forty years agricultural intensification on the productive land and cropping on the marginal lands have resulted in degradation of 60per cent of the prime agricultural lands in the country.

Because of its narrow focus there exists a knowledge gap in the analysis of land degradation problems in Pakistan. There is a general consensus that poverty leads to resource degradation, however there is a little research in Pakistan that can confirm the feedback of land degradation problems on the increased incidence and level of poverty. There is anecdotal evidence that biophysical changes as effects of land degradation processes are transforming into complex socio-economic problems in Pakistan. The MRE analyses a nation wide land degradation and poverty levels data from 1990 to 2005 to explore a causal link and a relationship between the two processes in Pakistan. The MRE will investigate that how land degradation problems and levels of poverty interact and influence each other. My Research is expected to redefine management approaches to land degradation problems and look forward the opportunities to integrating NRM issues with the poverty alleviations strategies in Pakistan.

Israel Bewang

Master of Forestry Scholar
Community Forest Management in Papua New Guinea

E: israel.bewang@anu.edu.au

Research Description

Community forest management is not for economic gain only but for both cultural existence, poverty eradication, and environmental reasons. Approximately 98per cent of forests of PNG are owned by indigenous people under customary ownership. This is recognised under the national constitution but management for economic gain is done in a way that customary rights are taken away by the state who in turn allows the logging companies to manage them and pay very little to the owners. Can the forest-owning communities be supported to manage their forests themselves and improve their living standards and alleviate poverty from amongst them? There are a few NGOs and community initiatives/groups in PNG that are doing community forest management to empower indigenous landowners to manage their own forest resources and improve their livelihoods. Despite these efforts, there is lack of policy support for community-based forest management (CBFM) by the government of PNG to back local participation through community-based forest management.

I will review available literature and explores examples of community forest management from historical, policy, economic, ecological, sociological, and political perspectives and explore how CBFM can be done in PNG.

Will Fargher

Master of Environmental Science Scholar
Current and emerging challenges in water resource management

E: will.fargher@nwc.gov.au

Research Description

In light of the scale of international water challenges, the rigorous assessment of operational obstacles facing institutional reforms is crucial to improved water management and use. This research examines the social, political, and institutional contexts in which contemporary water reforms are being implemented and how these factors are influencing the extent of the results being achieved.

Helen King

Master of Environment Science Scholar
The challenges and opportunities for using emission trading to reduce greenhouse gas emissions from Australian agriculture.

E: helen.king@anu.edu.au

Research Description

Agricultural emissions of nitrous oxide and methane from agriculture account for sixteen to twenty percent of Australia's greenhouse gas emissions. In the light of the proposed Australian Emissions Trading Scheme, this research examines what options are available for measuring and monitoring greenhouse gas emissions and abatement from agriculture that may overcome the practical issues for emissions trading.

Luke Pinner

Master of Environmental Science Scholar

E: luke.pinner@anu.edu.au

Research Description

I am currently studying part-time for a Master of Environmental Science. My sub-thesis project is: The influence of weather, vegetation and terrain characteristics on the severity of the 2003 wildfires in Kosciuszko National Park. Previously, I completed a BAppSc Resource and Environmental Science (UC 1997) majoring in ecology and statistics and a GCert Applied Science (CSU 2001), majoring in spatial analysis and modelling. My interests are spatial analysis, landscape and fire ecology. In addition, I work full time for the Department of Environment and Heritage as a GIS and Remote Sensing analyst.

Matthew Ruffin

Masters Scholar
Energy sustainability

E: matthew.ruffin@anu.edu.au

Research Description

I am a student currently in search of a niche. I have a very broad interest in all aspects of energy, water and resource sustainability, although I am particularly interested in the pathways to energy sustainability, and the implications of climate change on urban sustainability. I am also interested in the systems which drive individually wasteful behaviours and the way in which these behaviours can be modified through policy and education.

By the end of the year I should have a much clearer idea of the specific direction in which I am headed, which will hopefully involve a PhD investigating some aspect of energy policy or urban sustainability.

Tony Stuart

Master of Forestry Scholar

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Research Description

Social impacts of expanding plantations and the role of community trust: a case study of the Wellington Shire, Gippsland, Victoria.

An expansion of privately owned timber plantations has in part been prompted by the diminishing native forest resource available for harvesting. In districts where there is a significant conversion of land use from agriculture to plantation forestry corresponding social impacts have been observed. These have the potential to be both socially fragmentary and disruptive as well as precipitating community renewal and revitalisation. As agents of this change, the timber plantation companies are a natural focus for hostility and distrust.

The purpose of this research is to look at the positive and negative communal perceptions of and responses to change and the role of trust or lack of trust in this. I will also examine ways that industry can build trust and positive social relations as the community changes.

Deazy Rachmi Trisatya

Master of Environmental Science Scholar

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Research Description

Forest conversion, as one of the most obvious land use changes, has been a long-term process in Indonesia. Land use change leads to environmental degradation which consequently triggers natural disasters such as floods, drought and landslide, particularly in upstream areas which function as infiltration and catchment areas. However, different catchment areas or watersheds response differently on hydrological regimes as land use changes.

My research examines biophysical characteristics of Tondano Watershed in North Sulawesi, Indonesia and their hydrological responses within the alteration of land uses. The use of Geographical Information System in the study as an analysis tool will help to give better understanding on how biophysical factors interact within the system. Hence, land use planning based on site specific approaches would be more likely to improve.

Tanya Zeriga

Master of Environmental Science
Modelling extinction risks of
Papua New Guinea Birds

E: tanya.zeriga@anu.edu.au

Research Description

High levels of local bird endemism coupled with increasing rates of forest change in PNG mean that more PNG bird species are likely to become threatened in the near future. Conservation-based data that quantify the abundance and habitat requirements of these birds are needed to allow conservationists a chance to be proactive in addressing this conservation need. Therefore, for my Masters thesis, I will use the best available data from wild bird populations and model extinction risk of highly vulnerable species using a range of likely scenarios in the computer package VORTEX. Models are important, because by putting in different cases scenarios, we can predict what will happen and therefore be equipped to take the best preventative measures to prevent population extinction from taking place.

Sandra Lauer

Graduate Diploma in
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 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 social learning, multimedia and the Internet can be used to encourage a wider awareness of environmental and sustainability issues within local communities. I am also interested in urban ecology and adaptive management practices, as part of environmental policy and planning within local regions.

Gemma McBride

Graduate Diploma in
Environmental Science Scholar

Climatology and factors affecting animal distribution

E: gemma.mcbride@anu.edu.au

Research Description

For my undergraduate degree I studied Asian Studies at the University of Qld and University of Hong Kong. Since then I have been working as an outdoor guide and tour guide in various locations around the world. I came to ANU to study Environmental Science in order to gain more knowledge to pass on in my outdoor guiding. For the first semester I studied climatology including a research project on rainfall patterns in Singapore, looking at spatial and temporal distribution. I am now looking forward to research on the factors affecting animal population distribution.

Yuki Shiga

Graduate Diploma in
Geographical Sciences Scholar

E: yuki.shiga@anu.edu.au

Research Description

Dust aerosols have significant impact over the global climate and human societies. Therefore, 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.

Chin-Wei Tang

Graduate Diploma in
Environmental Science Scholar

E: chin-wei.tang@anu.edu.au

Research Description

I completed a Bachelor of Science in Environmental Studies from the University of Oregon, USA in 2003. Since then, I have participated in a project on city forest management invasive species issues and interned for a beverage container recycling advocacy institute. My recent work was at a co-ordination node based in Thailand for a program on water, environment and resilience which liaison with research groups from other Mekong countries. I am studying graduate diploma in Environmental Science, in the hope to enhance my knowledge and skills towards research and writing and to develop a focus. My broad interests include water resource management; urban environmental issues in Asian cities like transportation, recycling (production and consumption patterns, policies), pollution; land use changes; socio-economic and environmental impacts assessments; and Mekong regional development.

Lemmi Briedis

Honours Scholar
'Small Things-Big Returns': The portrayal of emergent nanotechnology in Australia

E: u4227880@anu.edu.au

Research Description

Nanotechnology, the manipulation of matter at the atomic scale, is emerging rapidly globally, and in Australia. The predicted transformative potential of this technology suggests an urgent need to consider how society influences such technological changes and conversely, how the emergence of this new technology will affect society. The thesis aims to explore and interpret how nanotechnology is portrayed in Australia by discovering how nanotechnology is framed in the public discussions taking place, in which media, who is partaking, why, and what issues are being raised, or not. Framing is an important influence in the initial perceptions, and therefore subsequent evolution, of this new technology. Comparisons are also made with developments internationally. This depiction of the Australian portrayal will indicate areas of interest and concern, draw conclusions, and identify areas for further research. The time frame is the present, 2007, with reference to historical context and implications for the future.

Alexandra Campbell-Wilson

Honours Scholar
Trends, variability and extremes of temperature and rainfall in tropical and subtropical urban Australia.

E: u4111365@anu.edu.au

Research Description

Australia is a highly urbanised country which is predicted to experience significant impacts from climate change. This issue is the cause of considerable concern for populations now and into the future. The aim of the study is to identify changes in the trends, variability and extremes of temperature and rainfall in tropical and subtropical urban environments of Australia, in the context of climate change. These changes will also impact upon the occurrences of heat stress and their impacts on human health. My study areas are the small to medium urban settlements of Cooma (NSW), Bendigo (Vic), and Darwin (NT). This research will contribute to the iACCIUS project which is being conducted at ANU. This research aims to identify and explain in a meaningful manner the extent of any physical changes in these urban settlements.

Deborah Cleland

Honours Scholar
People, play and participation: the role of models in stakeholder engagement.

E: U3274115@anu.edu.au

Research Description

Coral reefs in the Philippines are over exploited, threatening the livelihoods of local communities. The purpose of my research is to investigate the use of participatory modelling tools to aid in sustainable management of such problems, using the coral reef in the Lingayen Gulf, Northern Philippines as a case study. Specifically, the aim is to develop a modelling resource to enable an interdisciplinary team comprising of reef scientists, managers and users to better understand the links between local, regional and global processes, develop a common understanding of the critical issues and uncertainties, and develop scenarios for their own areas to explore the effects of different management strategies on the reef.

Nicholas Harris

Honours Scholar
Ecosystem services and water management

E: u3964956@anu.edu.au
harris.nicholas@gmail.com

Research Description

This thesis will explore farmers' use of water resources and how that relates to the overall management of ecosystem services. The case study focusses on dryland and irrigator farmers in the MIA and their use of and opinions about water management. Interviews will be conducted and analysed to determine any interesting differences in the way dryland and rice farmers manage and think about water. These results will contribute to a discussion of the gaps in current water policy and the sustainability of farming practices. A framework of resilience thinking will be used which incorporates system dynamics and adaptive cycles.

Matthew Kinny

Honours Scholar
Optimising the productivity of mixed Blackbutt forests in North East NSW

E: u4121909@anu.edu.au

Research Description

The North Coast of New South Wales has some of Australia's most productive and diverse native forests, which have historically supported a vibrant forest industry. However, the Regional Forest Agreement for North East New South Wales has significantly reduced the size of the production estate and limited silvicultural operations to either 'single tree selection' or small 'Australian group selection'. There is concern that, in their current form, these silvicultural techniques may be, a) hi-grading the forest by removing vigorous large stems and leaving small suppressed stems and, b) not achieving vigorous regeneration of shade intolerant species such as Blackbutt (*Eucalyptus pilularis*). This project is investigating operational improvements to the current silvicultural techniques in order to maintain or increase timber production from the remaining forest estate. The project is being undertaken in collaboration with Forests NSW, with research sites located in Blackbutt type forest around Coffs Harbour and Port Macquarie.

Edwina Loxton

Honours Scholar
The employment of Aboriginal people in the forestry industry

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Research Description

Increased focus on the involvement of Indigenous peoples in natural resource management has occurred at the same time as concern over the poor socio-economic conditions faced by many Aboriginal communities has grown. My research focuses on the employment of Aboriginal people in the forestry industry. I am interested in the benefits that individuals, their families, and communities may receive from this employment, as well as the challenges that may reduce these benefits. I carried out field work in and around Cairns, Queensland, to interview Aboriginal and non-Aboriginal employees, and representatives from support organisations and the government sector about their experiences in the forestry industry and their perspectives on the benefits and challenges which emerge.

Key themes which have emerged are the supportive and trusting relationships which are built during training and employment, and the increased self-esteem that results from 'real' employment.

Hedda Ransan-Elliott

Honours Scholar
Students studying sustainability in the study abroad context: barriers and future directions

E: hedda.ransan-elliott@anu.edu.au

Research Description

The formulation of my research topic was inspired by the tangible link between the cosmopolitan ideal of open cross-cultural exchange and the broad aims of Education for Sustainability (EfS). Cosmopolitanism is a key component of a liberal sustainable education and it makes an important contribution to the debate surrounding global equity and sustainability. International education is an ideal area in which to explore these ideas. My research is examining the relationship between the study abroad experience and how this impacts on students' broad education, learning and self-identity. This study is exploratory and timely since higher education institutions worldwide are promoting the internationalization of education through student and staff exchanges and short-stay overseas field trips. I am interested in what factors foster and inhibit positive learning outcomes for students engaging in sustainability in a study abroad context.

Simon Roberts

Honours Scholar
Projecting farm scale product values and volumes

E: u2561304@anu.edu.au

Research Description

My research aims to assess how the management of DSF in the Southern Tablelands can be improved. The need for better understanding has already been identified, but carrying out a normal inventory is far too expensive and time consuming, especially with the low value timber associated with private land/farms. Accordingly, I am carrying out an inventory at a farm scale on three sites, meeting both time and cost constraints. This information will be used to build predictive models calculating value volumes. The final step will be to extrapolate this information across the whole Southern Tableland region, using a remote sensing tool such as the Australian Greenhouse Office's Productivity Index.

Alexander Stodulka

Honours Scholar
Water chemistry of saline groundwaters of the Muscle Creek Catchment, NSW

E: alex_stodulka@hotmail.com

Research Description

Increasing levels of salt within the waterways of our catchments are of growing concern. The Muscle Creek Catchment has been listed as a priority catchment by the Hunter Catchment Blueprint and is targeted for future salinity works, due to the existing agricultural operations and increasing residential developments. Located within the Hunter Valley, an important industrial and agricultural hub of NSW, salinity within the Muscle Creek catchment is impacting upon surface and groundwater quality and land productivity.

Working closely with The Hunter Central Rivers Catchment Management Authority (HCRCMA) and Dr Bennett Macdonald, the project is designed to analyse water chemistry within the catchment and to determine the source of salts from the underlying Permian and Carboniferous geology. Results will be used to develop Best Management Practices for individual properties of the catchment and in the application of an overall Salinity Catchment Action Program by the HCRCMA.

Kirien Whan

Honours Scholar
What is the relationship between different El Niño–Southern Oscillation (ENSO) events and the Australian monsoon?

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Research Description

My thesis looks at the relationship between different types of ENSO events and monsoon rainfall. The research will characterise the response of the Australian monsoon to ENSO variability. Specifically, two indices of sea surface temperature (SST) will be used to capture the different locations of the warm water anomaly in the Pacific Ocean. These indices will then be correlated against measures of the Australian monsoon. The correlations will be performed to see if different locations of the warm water in the Pacific relate to differing rainfall responses. To address this aim I will analyse the rainfall timeseries, examine key characteristics of the monsoon and relate the variations of rainfall through time to different ENSO events. This research will help to increase understanding of how ENSO is related to Australian rainfall.

Carina Wyborn

Honours Scholar
Perceptions of climate change in Kosciuszko National Park

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Research Description

Changes to the global climate will be acutely felt in alpine environments and this change is likely to transform both the ecology and the economy of the Australian Alps. With over three million visitors each year, tourism and recreation are the dominant human activities in Kosciuszko National Park (KNP); activities that are intimately linked to the seasons and climate of the area. The purpose of this research is to develop an understanding of perceptions of climate change among recreational users and managers of KNP. The research will focus on beliefs and attitudes about, and responses to, climate change in the context of a strong attachment to place associated with the Park.

Honours - Semester 1, 2007

Back Row L-R: Dan Mackinlay, Alex Stodulka, Simon Roberts, Nicholas Harris, Ian Scanlan
Middle Row L-R: Matthew Kinny, Hedda Ransan-Elliott, Lemmi Briedis, Iome Christa, Deb Cleland
Front Row L-R: Ruth Pitt, Alexandra Campwell-Wilson, Edwina Loxton, Katherine Nairn, Kirien Whan, Carina Wyborn



PhD

Hezri A. Adnan
Connecting sustainablility indicators to policy systems

Hidayat Alhamid
Forests for the people? Indigenous forest management under decentralisation: a case study of the Rendani Protection Forest

Nadeena Beck
Causes and consequences of dispersal in an obligate cooperative breeder, the white-winged chough *(Corcorax melanorhamphos)*

Caroline Blackmore
Breeding biology and behaviour of the grey-crowned babbler

Paul Carlile
A semi-distributed catchment hydrology model for simulation of landuse change, streamflow and groundwater recharge

Daniell Connell
The Chariot Wheels of the Commonwealth

Houshang Farabi
A risk-based approach to control of water quality impacts caused by forest road systems

Leah Gibbs
Valuing Water: variability and the Lake Eyre Basin, Central Australia

Ben Gilna
Biotechnology and its use on landscape

Simon Gordon
Deliberating with Leviathan: addressing complex ecological problems in the administrative state

Karen Ivkovic
Modelling groundwater-river interactions for assessing water allocation options

Frank Jotzo
Global climate policy after the Kyoto Protocol: Flexible economic mechanisms for South and North under uncertainty and institutional constraints

Kirsten Maclean
Creating spaces to negotiate environmental knowledges at the environment and development interface in Australia

Amir Sadoddin
Bayesian Network Models for integrated catchment-scale management of salinity

Janet Stein
A continental landscape framework for systematic conservation planning for Australian rivers and streams

Wendy Welsh
Groundwater balance modelling with Darcy's Law

David Wilson
On green pythons



MASTERS

Arancina Kesaulija (Environmental Science)
Modelling habitat suitability for *Eucalyptus sieberi* in Southern Tablelands of New South Wales

Kim Marchiori (Environmental Science)
An assessment of Spring Creek and its catchment, Lake Cowal, New South Wales: implications for natural sequence farming techniques

Jennifer McMillin (Environmental Science)
Student engagement in education for sustainability at The Australian National University

John McRae (Environmental Science)
An investigation into the effectiveness of synthetic fermented egg as an olfactory lure for feral pigs (*Sus scrofa*)

Elizabeth Noble
Environmental management within the Alexander Maconochie Center (AMC): The critical success factors and barriers to the implementation of an environmental management system

Indra Prachhai
Implications of forest policies for biodiversity conservation in Nepal

Niranjan Shrestha (Forestry)
Community forestry and its implications on rural livlihoods in Nepal

Semi Siakimuto (Geographical Sciences)
Is there rainfall decline along the east coast of Australia?

Atsuko Tanaka
Human wellbeing, ecosystem services and agriculture: rice farming in Bohol, in the Philippines

Arief Utomo (Forestry)
Can social forestry in Indonesia benefit from adapting community forestry approaches from Nepal?

Stephanie Weidemann (Environmental Science)
Spatial and temporal variability of transpiration in the Gwydir and Namoi catchments from 2000-2004

HONOURS

John Bennett
Interactions between chemical ameliorants and vegetation in a sodic red-brown earth, Upper Bogan region, NSW

Rachel Bessell
Predictability of fire season severity using atmospheric circulation anomalies

Paul Cheeseman
Changes in soil properties resulting from biodynamic agriculture: Southern Tablelands, NSW

Serena Chen
Assessing industry viability: an investigation of the Eurobodalla Shire oyster industry

Amy Davidson
Key determinants of the fire frequency in the Sydney Basin region

Graham Fifield
Acacia browse as seasonal forage for fine wool merino sheep on the Southern Tablelands and Southwest Slopes of New South Wales

Adam Flanagan
Stream-aquifer Interactions in the Namoi Basin, Northern New South Wales

Hannah Hueneke
To climb or not to climb? The sacred deed done at Australia's mighty heart

Juliana Lazzari
An investigation of a vegetation classification framework - Vegetation Assets States and Transition (VAST) - as a source of information for natural resource management (NRM) policy in the rangelands

Heather Mason
Assessing the pathways and mechanisms of phosphorus transport in agricultural soils – Robertson, NSW

HONOURS continued

Emily May
How landholders use and value their private native forests: a study of landholders with dry sclerophyll forests on the Southern Tablelands of NSW

Melinda Mylek
Landholder perceptions about impediments to, and incentives for, the adoption of farm forestry in the Southern Tablelands region of NSW

Nilmini Ponnamperuma
Culture and Development: the accelerated Mahaweli Development Program, Sri Lanka

Jason Raapana
Macrozamia Communis: The Potential as a Biogeochemical Indicator of Mineralisation'

Millie Rooney
'Oh you're just up the street': Discovering Community as an agent of change

Robyn Sakkara
The potential of forest certification to address illegal logging in Asia-Pacific: an analysis of four case study countries

Eleanor Sobey
The Influence of vegetation structural attributes on bird species richness and abundance

Daisy Summerfield
The effectiveness of mulch and cover crops in stabilising sloping rehabilitation areas at Cowal Gold Project, West Wyalong, NSW

Benjamin Wielinga
Timber stiffness of radiata pine at paired breeding trials in Southern NSW: Using standing tree acoustics for genetic selection

Waverney Ford
Wilderness: The End of an Era

GRADUATE DIPLOMA

Ravindra Birau (Environmental Science)

GRADUATE CERTIFICATE

Konrad Knerr

PUBLICATIONS

BOOKS

Barr, C., Resosudarmo, D., Dermawan, A., McCarthy, J., Moeliono, M., Setiono, B. (eds) 2006. *Decentralization of Forest Administration in Indonesia: Implications for Forest Sustainability Economic Development and Community Livelihoods*, Bogor, Center for International Forestry Research, 155p.

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Storm over Canberra 2007 photo: Charles Tambiah

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