FROM THE DIRECTOR

By Prof Max Finlayson

The big issue for the rural parts of south-eastern Australia in the past weeks has been the release of the “water plan” for the Murray-Darling Basin.

My views on the need to repair the Basin’s rivers and wetlands are straightforward - it’s needed as they are in serious decline. From an ecological perspective the proposals to return water for environmental purposes are insufficient – this is not an assumption, the documentation spells it out. If this is the case how can the “plan” achieve its purpose of repairing the environment? We have seen the angry reaction of some rural communities to the current proposals. Imagine if the higher figures had been recommended.

For me this situation highlights a fundamental concept that we have yet to grasp – namely what price a degraded environment? What is the cost of an unhealthy river and wetlands? Have we missed something in the equation? Do we have all the facts? And do we understand the opportunities that come with a healthy river? While we grapple with the apparent losses can we also grapple with the social and economic opportunities around the solutions? Do we know what these are? We have in recent weeks seen the development of the Environment Water Trust that aims to bring local knowledge to government decision making on environmental water purchase and delivery and develop community-led initiatives for reviving wetlands in key areas. Do we need more such initiatives – initiatives that come from outside the box?

If we don’t fix the river now will we ever get another chance? We have an ecological problem – a real one, but I see the solution as a social construction that is bound by ecological and engineering constraints. I am also left wondering if we have really seen the level of consultation that is needed. I think we could usefully dispense with the warriors and replace them with the negotiators. I also see a direct role for researchers - we can contribute both knowledge and wisdom, and seek ways of moving the situation forward. As the debate turns towards dialogue I’d like to see researchers engaging and working within and across disciplines to address the complex issues that we face. If there was ever a need for an integrated and evidence-based effort - the future of the Murray-Darling Basin is it.

OPINION

By Prof Kevin Parton

OPINION ON THE GUIDE TO THE PROPOSED BASIN PLAN

Everyday we all make decisions in the face of uncertainty.

These range from buying a particular grocery item right up to buying a new home. What we do is attempt to reduce the level of uncertainty before we make a decision by doing our homework to find out which item would suit us best. That is, we research the problem to eliminate some of the uncertainty. However, at the point of making the decision there is always some residual uncertainty.

The same kind of approach is adopted in making business decisions, with a couple of important additional features. These are that once the decision is made in favour of a particular alternative, business will work hard to make sure that alternative works, and it will have contingency plans if it doesn’t seem to be working out.

Transferring these principles to the Guide to the Proposed Basin Plan, what do we discover? First, almost everyone is in agreement that we have done enough research to make a shrewd initial decision to reduce the water allocation to irrigators by between on average 3,000 and 4,000 GL/year. Yes, the Wentworth group and ecologists are saying that we need to take out 7,000 GL/year. Yes, the Wentworth group and ecologists are saying that we need to take out 7,000 GL/year, and yes, irrigators want less removed from potential irrigation use.

Second, previous research, backed up by the Guide, shows that reductions in agricultural output will be far less in proportionate terms than reductions in the amount of irrigation water. This is because water used in low farm productivity activities will be removed first and because there is scope for investment in more efficient forms of irrigation. According to the Guide, if we return 3 000 GL/year, the projected cost to irrigated agriculture will be $805 million per year. (cont next page)

SPECIAL FEATURE: This issue features another two of the Institute’s Strategic Research Areas—Innovative Perspectives on Energy and Climate Change from Socio-Analysis (IPE) on pages 4 & 5; and Social Research for Regional Natural Resource Management on pages 6 & 7.
This is about 13 percent of the gross value of irrigated production, which will reduce regional economies by 1.1 percent of gross regional product.

Third, the plan contained in the Guide could provide significant ecological gains in key locations in the MDB as more water is released. Nevertheless it should be emphasised that many wetlands are in a critical condition, and under national legislation the government must do more to re-establish them. While some ecological niches require periodic floods, other locations will respond to relatively small amounts of additional water. These considerations suggest it is appropriate that the plan take a whole-of-MDB perspective.

Fourth, the MDB Authority is rightly concerned that the short-term social and economic impacts on some communities and regions could be severe without structural adjustment assistance. We will need to engage with the members of these communities to develop a sustainable future that they support.

Finally, the existence of this uncertainty in many issues related to the Murray-Darling Basin suggests that there is much scope for additional research. Despite such uncertainty, this is the appropriate time for decision making about the future of the Basin. As with business decisions, the decision we make should be supported by additional policy action to make the decision work, and by contingency plans that we can implement if things do not unfold how we expected them to.

The world is looking at how Australia deals with the massive challenges of water re-allocation. As suggested in the Guide document, we will need to strive for balance. This will be a process of vigorous debate between various interests. This is a normal process in a democracy for dealing with uncertainty.

*Readers are invited to comment on any opinion piece in “Connections” which may, or may not be published in the next issue. However all responses will be forwarded to an opinion piece’s author. Please send to the newsletter’s editor Margrit Beemster on mbeemster@csu.edu.au

PROF MAX FINLAYSON

Institute director Prof Max Finlayson has continued to be kept busy with various engagements (including some research work out in the field) that have taken him around the country and overseas over the past three months. They include:

- A meeting in Gundagai for the NCARF Climate Change Adaptation Project “Limits to adaptation-Coorong wetlands” that he leads on Aug 5 with a second meeting in Canberra, Sept 20
- A meeting of the Wonga Wetlands Community Advisory Committee in Albury on Aug 6
- Sampling peat with Dr Julia Howitt and honors student Zac Zipley in the Warrnambool area, Victoria “in the wettest, coldest, windiest part of the year” Aug 9-13
- Birds Australia Council meeting in Melbourne, Aug 28 which was also attended by Institute adjunct Dr Justin Watson
- A “highly productive and challenging” National Water Commission workshop on non-traditional ways of valuing ecosystem services that he attended with Prof Mark Morrison in Canberra, Aug 31 and Sept 1
- The graduation ceremony for the completion of his CSU Graduate Certificate in University Leadership and Management at Wagga on Sept 1. “I can highly recommend the course to academics, particularly those wanting to develop their management and leadership skills, as part of their career path,” says Max.
- A workshop organised by the Lachlan CMA on “Wetlands of the Lachlan River” in Queanbeyan, Sept 3
- The professorial forum in Wagga with keynote speaker John Williams talking on the water management problems of the Murray Darling Basin Sept 8 – 9
- The Murray Darling Basin Association workshop on “Climate change and water management in the Murray Darling Basin” in Beechworth on Sept 10
- Sampling wetlands for seedbank analysis with honors student Allie Hendy at Coolamon on Sept 14
- A meeting with the CEO (and newly appointed ILWS adjunct) of the Winton Wetlands Management Committee Michael Vanderzee. (Max has been appointed chair of the Committee’s Scientific and Technical Advisory group. A/Prof Ian Lunt is a member of the same committee)
- The Challenges in Environmental Science and Engineering Conference in Cairns, Sept 27 to 30 where he presented two papers, “International lessons for wetland inventory” and “Wetlands and carbon storage” and chaired a session on wetland assessment
- A Crawford School Dialogue in Canberra at ANU on the Murray-Darling Basin Plan, October 14 to 15 where he gave a paper on “Priorities for biodiversity and ecosystem services in wetlands in the Murray Darling Basin.”
- Science council meeting of the Tour du Valat research Station in Camargue, France, Oct 22 to 24 (This is Max’s fourth visit)

CHANGING COMMUNITIES

Dr Angela Ragusa gave a presentation and led a workshop on “Changing communities: tree changers in country Australia” Community of Practice, Department of Planning & Community Development, Benalla, VIC on August 17.

SUSTAINABILITY AWARDS

Prof Allan Curtis was the guest speaker at the Indigo Shire Sustainability Awards on October 15 at Rutherglen Research Station, Victoria. Allan spoke on “Making a difference: Influencing others.”

TRANSITION OPTIONS

Institute adjunct Barney Foran presented a paper on “Low carbon transitions options for Australia” at the 7th Biennial International Workshop “Advances in Energy Studies 2010: Can we break the addiction to fossil energy?” in Barcelona, Spain, Oct 19 to 21.
RESTORATION AND CONSERVATION

Institute adjunct Justin Watson was an invited guest speaker at Birds Queensland Meeting in Brisbane, during September. Justin spoke on Queensland, tradition and conservation in the Torres Strait Island to an enthusiastic group of more than 100 members. Justin also gave a presentation on Restoration Ecology - principals and practices at the annual THECA (The Hut Environment & Conservation Association) Forum, at CSIRO, Brisbane on September 11. This annual event sells out each year and attracts leading professionals from government, industry and academia.

WOMBAT RESEARCH

Alison Matthews presented a paper on October 23 in Sydney at the Royal Zoological Society of NSW 2010 Forum entitled ‘Wildlife and climate change: towards robust conservation strategies for Australian fauna’. The paper co-authored with Peter Spooner and Dan Lunney was on ‘Herbivores in the herbfields: will wombats shift to higher altitudes in alpine areas?’

REGENT PARROT RESEARCH

As part of their ARC Linkage grant, A/Prof Dave Watson and Dr Peter Spooner organised a field day at Robinvale on October 27 to survey the endangered Regent Parrot. Over 40 workers from the partner company Select Harvests participated as did local community members.

OVERSEAS TRIPS

NEW ZEALAND

Dr Digby Race was awarded a Visiting Erskine Fellowship by the University of Canterbury (UC), Christchurch, New Zealand, to teach a post-graduate short-course – ‘Community Forestry’ in the School of Forestry during July. It was also an opportunity for Digby to discuss with UC research colleagues the socio-economic and land-use implications of the introduction of NZ’s emissions trading scheme (ETS) on the 1st July 2010, with the option for planted forests to accrue financial payments for ‘carbon credits’. It was his third Visiting Erskine Fellowship.

HUNGARY

In late September, Dr Peter Spooner attended the 2010 IENE (Infra Eco Network Europe) conference held in Velence Hungary (near Budapest). The focus of the conference was on ‘improving connections in a changing environment, where international researchers in the field of road ecology met to discuss on the impacts of roads and other infrastructure on the environment. Peter hosted a symposium titled “Transport corridors as habitat”, and presented a paper on Mallee roadside vegetation, based on honours research by John Loschiavo. While there, Peter participated in a field trip to the Steppe grassland plains of Southern Hungary, where he had the opportunity to inspect roadside verges of high conservation status, noting many similarities to Australian conditions.

CROATIA

Agricultural land abandonment and the intensification of remaining farmed land have occurred simultaneously in many countries over recent decades. In Croatia, where I spent my study leave, these processes are changing farmed landscapes very rapidly, with severely negative effects on biodiversity. I joined a research group from the Croatian Institute for Ornithology to quantify relationships between farmland habitat and bird diversity and abundance in a study area of traditional farmland along the Adriatic coast close to Split. The project will be ongoing and will provide data to mitigate the worst effects of agricultural changes— by Dr Iain Taylor who has recently returned from SSP Leave Research in Croatia

IN THE NEWS

It’s one thing to do a quick interview on camera for a TV news broadcast but quite another to be filmed for a segment for the ABC’s leading science show, Catalyst, as the Institute’s A/Prof Ian Lunt has discovered. The crew from Catalyst spent two days in September filming for a story on Ian, CSIRO’s Dr Suzanne Prober and PhD student Ian Cole’s research project on restoring Grassy Whitebox Woodlands understoreys using grazing, fire management and sugar applications. But before the actual filming there were hours of planning and liaising with the show’s researcher Matt Levinson and then producer Paul Schneller to ensure the film crew would have the shots and interviews they needed.

In the end, filming was done at one of the project’s trial sites, Bakes Travelling Stock Reserve at Gerogery; on the property of a local landholder, Judy Frankenberg, at Howlong; at an important remnant at the Mundawaddery cemetery near Henty, and at the campus at Thurgoona. “Filming was a lot slower than I expected,” says Ian, “as I hadn’t realised how many different shots and visual effects go into making each short TV segment. The film crew were extraordinarily detailed and thorough.” Not that Ian was complaining, mind you, as having your research promoted through a show like Catalyst, puts it very much in the public arena. "The key message we wanted to give is that woodlands are an endangered ecosystem, greatly in need of improved management and restoration, and that controlling high nutrient levels is a really important issue for their conservation. The episode featuring the team’s research is expected to go to air in February, 2011.


(Above) Dr Peter Spooner inspecting a high conservation value roadside in southern Hungary

(Left) Study area in Croatia

(Left) Dr Suzanne Prober with film crew from Catalyst
INNOVATIVE PERSPECTIVES ON ENERGY AND CLIMATE CHANGE FROM SOCIO-HISTORICAL ANALYSIS (IPE)

With an ever-increasing demand on the world’s energy resources and a corresponding rise in energy costs, the aim of this SRA is to challenge current thinking about energy and its consumption with research which underpins development of alternative means of distributing energy equitably, securely and sustainably.

Led by A/Prof Ian Gray who is now an Institute adjunct since his retirement mid-year, the researchers in this SRA bring together an unusual combination of disciplinary interests with history, spatial analysis and business/accounting/governance perspectives. Members have skills in socio-cultural and historical analysis, and their points of intersection such as collective memory research, interpretation of heritage and tradition, concern for social equity, governance and historical policy analysis; and other fields relevant to energy including financial and spatial analysis.

Energy is a very significant focus for Governments’ climate change policies and is also an issue in its own right due to pressures on supply and public concern about its sustainability. Some of the many questions around energy issues include how to live better while we consume less at home; how to move people and goods more efficiently; how to change the way we distribute energy; and how to ensure equitable availability of energy and participation in planning for change.

Policy-making needs to be informed by a broad range of perspectives so institutions of governance are suited to the task of securing sustainable and equitable availability of energy. The socio-cultural disciplines, including sociology, history, political science and human geography are already adding to the national policy and research repertoire. This SRA intends to build on this with its unusual combination of research capabilities, and ability to apply broader perspectives to particular problems including the view that the cultures within which individual and collective decisions are made have developed over long periods of time. Policy is often built on what is taken-for-granted, including interpretations of history. If those taken-for-granted ideas can be identified and challenged, then research will advance and policy develop.

INNOVATIVE PERSPECTIVES ON ENERGY WORKSHOP

The major event for this SRA this year was a workshop held on August 30 at Wagga.

With the title “Developing Socio-Historical Research on Energy” and three international speakers, the workshop with 13 participants helped set the agenda for future research directions and possible collaborative research projects. The day began with an appraisal of the international energy issue by Institute adjunct Barney Foran who looked at the world’s energy sources – oil, coal, gas, uranium and renewable energy from wind, solar, geothermal and biomass in turn and the tension between energy production and carbon emissions.

The three international speakers were Professor Colin Divall, from the Institute of Railway Studies & Transport History, University of York who spoke on “A usable past for the future of mobility”; Professor Hans-Luidger Dienel of the Berlin Technical University Institute of Society and Technology who spoke on “Participation in the regional implementation of renewable energies” and Dr Massimo Moraglio, also from Berlin Technical University, whose talk was on “Liveable communities, public transport and the history of automobility.” All three (as is A/Prof Ian Gray) are members of the International Association for the History of Transport, Traffic and Mobility.

Prof Dienel’s presentation focussed on project in the Lausitz region in Eastern Germany which aimed to raise the community of this traditional coal producing region’s awareness and motivation for renewable energy production and using renewable energy using participative methods. Some of the more interesting participatory tools used included a citizen’s exhibition with posters of citizens which included their perspective on renewable energy; the use of citizen’s juries where more than 1000 people were paid to come together, 25 people at a time, to discuss a particular problem related to renewable energy and offer the policy makers their proposals or citizens’ report at the end of a week; and a computer game, “Sustainable energy in the Lausitz region” aimed at the young ‘digital natives’ where participants in the game were the energy managers charged with turning the region into one with sustainable energy sources.

Dr Moraglio, said in his presentation, that for many decades auto-mobility (travelling by car) was seen as the answer for mobility. “Such a statement is self-propelling, self-affirming and self-fulfilling,” he said. “But look at the problems the car has given us. The car culture has created an army of convicted people, the people unable (because of their personal income or other reasons) to join the car club. The car culture is also one of the main culprits of the destruction of livable social space. Our streets were once public spaces, now they are just traffic lanes. And our auto-mobility these days has given us huge energy problems, massive pollution problems, and median and long term dilemmas.”

Sonia Graham, CSIRO, a former ILWS PhD student, completed the morning presentations with an overview of the results of a recent social research project on environmental impacts of Australian household consumption and lifestyles.
Draft programs for the SRA identified included:

- Citizen participation and rural renewable energy developments, including equity issues in distribution of renewable sources and assets
- Necessary and unnecessary mobility applying concepts of scarcity, collective memory and social construction of consumption in popular culture, rights to affordable mobility
- Rural and peri-urban mobility, looking at alternative technologies, disability, health and accessibility
- Gendered, class and spatially stratified environmental behavior including work, industrial and domestic practices
- Political cultures and the interpretation of energy as a public issue

“What’s been really positive is the realisation that although we are expected to be offered by other participants at the workshop, including Drs Catherine Strong and Merrilyn Crichton will edit a special edition of Rural Society on energy next year. Contributions are expected to be offered by other participants at the workshop, including the international speakers.

* Drs Catherine Strong and Merrilyn Crichton will edit a special edition of Rural Society on energy next year. Contributions are expected to be offered by other participants at the workshop, including the international speakers.

PROFESSOR COLIN DIVALL

One of the three international speakers at the International Perspectives on Energy SRA’s workshop was Prof Colin Divall, who is a Professor of Railway Studies, with the University of York’s Institute of Railway Studies & transport History in the U.K.

His visit to Australia was on the second leg of what ended up becoming a round the world trip. It began with being invited to South Africa and Australia at about the same time. “There was no way I could justify flying from the U.K. to South Africa and back again and then to Australia and back in terms of the carbon emissions from air travel,” says Colin who added a series of meetings, a conference in the U.S and a holiday in New Zealand to the trip.

Colin is involved in an interesting initiative to develop a transport museum in Cape Town, South Africa. “The University of Western Cape and a local bus company are looking at ways of helping Cape Town develop in a sustainable way,” says Colin. “Cars are just flooding onto Cape Town’s roads and the congestion and CO2 emissions are just getting worse. The idea is that public transport has a role to play in creating a sustainable form of mobility but how do you mobilise public support for that? One way is to create a museum. Yes it is about the past but it is set in the context of how we got ourselves into the present predicament, and how do we think about moving ourselves in the future. Can we look to the past to understand why we think the car is the only solution to mobility?”

Colin says there were parallels to the thinking in Cape Town with the theme of the IPE workshop.

A point he made in his presentation was that we need to consider the carbon emissions of personal travel more than we appear to do at present. “I don’t think personal mobility is bad,” says Colin. “Quite the opposite. Travelling for leisure can be life enhancing. I’m not saying we should stop travelling ‘unnecessarily’ but we have to recognise that we can’t travel more and more simply because we want to. There are costs involved and I don’t mean in terms of our wallet; it’s the wider costs, particularly to the environment. What we are doing at the moment is we are spending our environmental capital collectively without us, as individuals, having to pay the full cost of our travelling.”

Colin used the analogy of having $1million to spend. “If you spent that money as if there was no tomorrow eventually you would run out,” says Colin. “It’s a bit like that with the environment. We are spending the planet’s capacity to absorb carbon dioxide and we are doing this collectively and as individuals. As individuals and as societies we have to start counting the environmental costs of what we do. Once you start doing that you start talking about inequalities. We, in the west, are travelling a lot so as individuals and societies we are spending a lot more of the planet’s capacity compared to those who can’t afford to travel. That’s clearly not fair.” This also brings up the concept of intergenerational justice. “If we burn this carbon now with next to no regard for the effect that has on the climate and on the sustainability of life, then future generations are going to have to cut back on their travelling even more.”

Colin says he would like to see the cost of carbon emissions captured in the amount people pay for all their travel including rail travel, which while more sustainable and ‘greener’, still has an environmental cost. “Public transport is not the sole solution but in urban environments it can be a big part of the solution,” he says. “But you do need to consider the relationship between public transport and land use. In the UK there has been a tendency to close the hospitals that used to be in the centre of cities and which were quite accessible by public transport, sell the land because they were on valuable real estate, and use that money to build new hospitals which are often on the edge of the city or worse, and much less accessible by public transport. That kind of financial calculation takes no account of the carbon costs of making the hospital less readily accessible by public transport.”

Colin says public transport can be part of the answer in rural areas. He gave the example of Switzerland where, in some rural parts, the public transport network has been developed very successfully over the past 10 or 15 years, so much so, that there has been a reversal in the trend of increased car usage. “To improve the public transport network requires a lot of thought and a fair amount of investment,” says Colin. “The Swiss do spend a lot on public transport, with the level of subsidy comparable to the UK but the Swiss get much better service because they are serious about integrating different modes of public transport and they see public transport as a public good.”

Both he, and fellow international speaker Dr Massimo Moraglio, talked about the fact, that, at least in European and other cultures with strong European connections, freedom of mobility is regarded as a “Good Thing.” “This is extremely deeply rooted in our history and has become very much a part of how we think about ourselves as part of a society and as individuals,” says Colin. Historically the freedom to travel has delivered all sorts of benefits and it will continue to do but what we have to do is ‘unpick’ how those attitudes came to be formed. In doing so we might come to realise that mobility is not always a good thing; that sometimes we can have too much mobility and in a sense be trapped by the idea that movement is good.”

NEW AND DEVELOPING PROJECTS

Rod Rumbachs, Warwick Baines and A/Prof Ian Gray have been working on a project which will map change in energy distribution and associated policy and business practice. The first paper from the project has been completed with some of the findings to be presented by Warwick at a workshop at ANU on December 1. The workshop is organised by IPE member Troy Whitford and the plan is to develop a book on government intervention in rural areas. The paper shows how historical and spatial analysis can help to shed new light on assumptions being made about infrastructure during public debates.

Dr Ingrid Muenstermann is developing a project on wind farming in consultation with Professor Peter Sinclair of Memorial University of Newfoundland.
SOCIAL RESEARCH FOR REGIONAL NATURAL RESOURCE MANAGEMENT

As its title indicates, the aim of this SRA is to improve regional Natural Resource Management decision making.

The SRA builds on one of the Institute’s strengths, namely that it has a large contingent (the largest at any one Australian university) of people working on the social dimensions of Natural Resource Management. Led by Prof Allan Curtis, members of the team are recognised nationally and internationally for their leading research in this field. Members have also been at the forefront of efforts to identify ways social research can contribute to integrated research teams addressing NRM issues, both in Australia and overseas.

The SRA is comprised of 9 full-time academics and four research adjuncts who have expertise in conservation behaviour of rural landholders, regional and catchment scale adaptive management, social learning, community-based forestry, landholder perceptions and land management decision making, triple bottom line reporting, community engagement, environmental policy, capacity building in NRM and agriculture, environmental economics and planning for multifunctional rural landscapes. As well there are 16 full-time PhD students working on a various dimensions of NRM with many different foci, everything from big picture issues such as climate change and transformation of agriculture to specific investigations at a local level looking at a specific aspect such as social norms and values. A number of these students have either just graduated or are close to completing their PhDs which has added to the research capacity of the SRA on a range of topics. Early-career researcher Dr Michael Mitchell, who received his doctorate this year, is now employed as a post-doctoral research fellow as is Emily Sharp, who submitted her PhD earlier this year.

SOME CURRENT PROJECTS


Transformation for resilient landscapes and communities – Murray case study. NSW Natural Resources Commission and Murray CMA. Rod Griffith, Allan Curtis, Michael Mitchell, Professor Valerie Brown (ANU), Dr Brian Walker. (2009/2010)

Landholder use of stock and domestic and riparian rights to access Murrumbidgee River Water. NSW State Water, Allan Curtis & Nicki Mazur (2009-2010)

NEW AND DEVELOPING PROJECTS

A new and visionary development for the SRA is building on its international connections and adding a greater international dimension to its work. Not only does this give the Institute researchers the opportunity to share their experiences and knowledge but to learn from the experiences of others overseas in terms of how to improve Natural Resource Management in Australia. The team include Drs Joanne Millar and Digby Race who, between them, do a lot of work overseas in South-East Asia, specifically Laos and Indonesia. More recently Prof Allan Curtis has been involved in developing a substantial five year project funded by the Australian Centre for International Agricultural Research (ACIAR) with Dr C. Karthikeyan who is an Associate Professor of Agricultural Extension with the Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore City, India. (Karthi has already been to Australia twice for extended visits to work with Allan and other ILWS researchers, and Allan has also visited India.)

The project, looking at surface water management, also involves Dr K Palanisami from IWMI and a major Indian NGO (DHAN Foundation) and will involve a number of PhD students based in India.

The project will examine options for improving the livelihoods of rural landholders dependent on tank irrigation systems in southern India. As reported in a previous issue of Connections— Tank irrigation uses rain water that is stored in a traditional system of small dams known as ‘tanks’. These tanks are very important in India, as Karthi explains: “Small landholders and marginal farmers depend on tank irrigation for irrigating crops, trees, rearing ducks and fish, and making pottery from the silt they collect from the bottom of the tanks. The attractions of urban life, encroachment of urban areas and climate change are some of the factors affecting tank irrigation systems.”

A large research project exploring the socio-economic dimensions of community forestry in Indonesia, anticipated to be valued at $906,000 and to operate for 4.5 years (starting late-2010). This research builds on the considerable foundation created by several PhD researchers – Bugi Sumirat, Lukas Wibowo, Yustina Murdininingrum & Tri Wahyudiati – all working on different aspects of community forestry in Indonesia. The new research project – ‘Community forestry in Indonesia’, will involve experienced researchers from the Universities of Melbourne, Queensland and Southern Cross, and the University of Gadjah Mada in Indonesia, as well as Indonesia’s Forestry Research & Development Agency (FORDA), and the International Centre for Forestry Research (CIFOR).

WAKOOL PROJECT

Prof Allan Curtis (through his association with the NCGRT), the NSW Natural Resources Commission and the Murray Catchment Management Authority provided seed funding last financial year for a one year project with the Wakool Shire Council in south-west NSW. The project, which has since received an additional year’s funding from the Murray CMA and NSW Natural Resources Commission, is looking at how rural, resource-dependent communities can intentionally change themselves in the face of lack of access to those resources.
greatly on the local logging industry. "Many in the community already know they are going to have to transform somehow," says Dr Michael Mitchell who is involved in the project with Institute adjunct Dr Rod Griffith. "It's on the cards and many talk about it openly so we are going in there to talk about what transformation means and how can the community determine the kind of future they want to have."

Two high-profile academics are also involved in the project — Dr Brian Walker (CSIRO Sustainable Ecosystems) who specialises in resilience thinking and Prof Valerie Brown (ANU Fenner School of Environment and Society) who specialises in collective thinking for social learning. “They are working together with us to see if these ‘big picture’ ideas can help a community find a future through transformation,” says Michael. So far, two community workshops have been held, one involving Wakool Shire Council and Murray CMA to explore resilience and collective learning tools; the other a resilience assessment workshop. A third workshop is being planned on community collective learning. “It's a really interesting project because we will actually be able to help a local government prepare its community plan; so it's a good example of participatory action research,” says Michael. "We are also helping the Murray CMA with its catchment action planning and we are looking at the possibilities of supporting their work in a more concrete way."

A further two projects are evolving from the Wakool project. Funding for these is being sourced through RIRDC which is interested in ongoing support for the Wakool project and two more case studies. One of these additional case studies is with the newly-formed community-based Cape York Natural Resource Management Board. "The Cape York region was the only area in Queensland without an NRM Board, and this seems to have been a disappointing outcome of the political situation up there,” says Michael who will be involved in the project. "We will be working with a new organisation governed by a Board of elected community representatives who are trying to find a new way to respond to critical NRM issues involving Indigenous, environmental, pastoral and mining interests. It is an interesting context to explore the potential for how collective learning might achieve new possibilities in community-based NRM."

The third case study hasn’t been determined as yet, but the researchers have time to decide on a suitable place. Given that the Wakool case study involves a local area within a regional catchment organisational area, and the Cape York study involves a catchment organisation working with multiple local community areas, the plan is to identify a case study at a broader scale involving interactions between catchment organisations.

**NATIONAL CENTRE FOR GROUNDWATER RESEARCH AND TRAINING PROJECTS**

In line with its Strategic Research Area on Social Research for Regional Natural Resource Management, the Institute plays an important role in terms of the social research being undertaken by the National Centre for Groundwater Research and Training (NCGRT).

The NCGRT, a Co-funded Centre of Excellence (funded by the Australian Research Council and the National Water Commission for five years), was established in 2009. Charles Sturt University (and the Institute) is one of 12 university partners in the Centre which also has four Government departments and four industry partners. The Centre is running five programs and the Institute is involved in the fifth program, Integrating Socioeconomics, Policy and Decision Support. Prof Allan Curtis, leader of the Institute’s SRA on Social Research for Regional Natural Resource Management, is a Chief Investigator in the Centre and leads the social research components of Program 5. The ILWS social research team includes two Post Docs (Dr Michael Mitchell and Emily Sharp) and a PhD student (Stuart Robertson). Currently a position for another PhD student is available.

One of the early tasks for the team is to review the social research on groundwater. Dr Michael Mitchell is leading this work. As Michael explains, “That’s meant looking at the international literature to identify the scope of the research effort, what has been done well and what needs to be done.” Michael is being assisted by fellow post-doc Emily Sharp who started in August year. “We’ve already realised there hasn’t been very much literature that has looked at community management of groundwater,” says Michael. “In some parts of the world there has been a shift away from ‘top-down’ control of groundwater allocations towards a more collaborative or community managed approach. One of the key concepts is community trust (which Emily studied in her PhD) and another is social norms, again researched by recent ILWS PhD students (Wendy Minato and Eloise Seymour).”

The second component of the team’s work is being undertaken by PhD student Stu Robertson (who started in March but is currently on leave). Michael explained that “Stu’s research examines the social construction of the concept of sustainable yield as applied to groundwater management. “As might be expected, different stakeholders appear to have different ideas of what the concept of sustainable yield of groundwater implies. Stu’s work will be exploring that, filling a much needed gap.” The other component of the NCGRT research being undertaken by the ILWS team relates to two case studies, one in the Namoi Groundwater System in northern NSW; the other in the Willunga Basin in South Australia. Both cases studies draw together teams of NCGRT scientists from different universities and disciplines to develop and apply integrated models to explore the impact of changes in policy and climate. “The people at ANU are very interested in how we can input social information into their modelling system,” says Michael. “Emily and Allan will conduct landholder surveys to gather data that will form a critical part of the data to underpin modelling in the Namoi. In the South Australia case study, I will be guiding the process of stakeholder engagement and drawing on interview data to contribute to the integration process.”

The Willunga Basin has one of Australia’s major wine-growing districts ( McLaren Vale), just south of Adelaide. Michael, who will be working on that project, says the area was chosen because it is quite small with groundwater in an isolated set of aquifers; and because there has been a huge investment in water re-use. “In the middle of the drought the irrigators who recognised it would be to their advantage to invest in a pilot project to see if the treated municipal wastewater from a treatment plant could be used on farms rather than sent out to sea.” says Michael. “The local farmers set up their own company and basically paid for the infrastructure to pump the water to their farms. They are also allowing other people to buy the water.” The SA Water Corporation paid for the required upgrades to the treatment plant through the SA Government’s Environment Improvement Program.
REGROWTH MANAGEMENT

A “GROWING” ISSUE: AN ILWS WORKSHOP ON REGROWTH MANAGEMENT

In many parts of Australia, native plants have regenerated densely in areas that have traditionally been managed for livestock grazing. In some places, this dense regrowth creates management conflicts and challenges. To address this growing issue, ILWS recently initiated a strategic research area (SRA) entitled “ecological and social responses to native plant regeneration in dynamic rural landscapes”. The goal of this multi-disciplinary research program is to enhance environmental sustainability in rural Australia by improving our ability to manage regrowth for a broad range of social and environmental values.

As part of the SRA’s activities, ILWS hosted a workshop at Albury on August 18 to synthesize information on how regrowth influences a wide range of land use options, including pastoralism, carbon storage, biodiversity and catchment water management. Workshop co-ordinator, Dr Ian Lunt, said, “Much of the scientific literature on regrowth management focuses on how regrowth can be managed in pastoral areas, especially in semi-arid rangelands. This is a big issue in some parts of Australia, and elsewhere in the world. However, regrowth also directly affects a variety of ‘new’ management options, such as carbon, biodiversity and water management. Very little has been written about regrowth management for these purposes. We wanted to discuss the positive and negative ways that regrowth affected each of these options, to better explore the wide diversity of management options that may exist in the future.”

The workshop involved a small group of researchers and managers from Queensland, New South Wales and Victoria, with participants from universities, state government agencies, a catchment management authority, and NGOs. “We wanted to focus on ecosystem processes rather than policy development, but it was vitally important that agency staff contributed to build on their huge experience and to keep the discussions grounded in real world issues”, said Dr Lunt. The workshop proved a busy experience as participants were challenged to integrate information from a wide diversity of fields. However, participants found the interactions to be highly stimulating and rewarding. “The discussions and feedback at the workshop helped me to crystallize a new way of integrating information about regrowth across a wide range of land management objectives”, said Dr David Eldridge from the NSW Department of Environment, Climate Change and Water. “I’ve worked on regrowth management in a number of different continents, and the integration we were striving to achieve simply hasn’t been attempted before. It was really exciting to develop this new research agenda.”

Workshop participants are intending to submit a paper based on the workshop outcomes. “Hopefully, by developing this new synthesis, and by fostering new interactions among participants, the workshop will promote some really interesting new research opportunities in the future” said Dr Lunt. “We really need to think about regenerating vegetation in innovative ways to best capitalize on the opportunities it could present in the future for issues such as biodiversity conservation and carbon storage”, said Dr Lunt. “This workshop was a great opportunity to kick start this dialogue.”

PROFILES

DR ANDREA CRAMPTON

Dr Andrea Crampton, 36, tells the story of how, as a child, growing up in St George in south west Queensland, she would scoot along an irrigation canal on water skis while being towed by a four wheel motorbike.

“It was fun but we stopped doing it because we were worried about taking in too many of the chemicals in the water from the herbicides and pesticides used by the crop dusters on the cotton,” says Andrea as St George is in the middle of Australia’s cotton producing region. That concern as a young person seems to have followed Andrea in her working life when you consider the various research projects she has worked on in her career as a parasitologist and to a lesser degree, microbiologist.

One of her most recent projects was an inter-disciplinary study (with sociologist Dr Angela Ragusa) on rural drinking water which found that over 50% of samples tested had levels of e.coli higher than that deemed suitable by Australian drinking water standards. “It was important to me because it was looking at a local concern with local people who can be under represented,” says Andrea.

Andrea, who was born in Tumbarumba, NSW, spent the first seven years of her life at Gundagai before the family moved to St George which is “six hours inland from Brisbane, still doesn’t have traffic lights, and is two hours from the nearest fast food outlet.” In 1991 Andrea went to the University of Queensland where she did her Bachelor of Science and her Honours in parasitology working on the phylogeny of cattle ticks (studying the family tree of ticks using DNA). She then did her PhD looking at the genetic basis of pesticide resistance in cattle ticks discovering a breast cancer gene in ticks that is of the same family as the one found in humans. From 1999 to 2002 Andrea went to Virginia Polytechnic State University in Blacksburg, Virginia in the US as a post-doctoral fellow looking at the genetic basis of mosquitoes’ immune response to the malaria parasite plasmodium. “I got to travel to Africa and suck mosquitoes off the wall off mud huts,” says Andrea. “We were the only people travelling to Africa to find malaria contaminated mosquitoes rather than avoid them.”

In 2003 Andrea was brought back to Australia to work for the CRC for Diagnostics at Queensland University of Technology looking at the genetic basis of human facial feature development with the aim of creating markers to be used in forensics to help identify suspects or victims from DNA evidence. In 2004 she went the University of New England at Armidale and worked on an Australian Wool Innovation funded project known as Integrated Pest Management of Sheep as a research fellow managing a project looking at parasite control in sheep. That involved faecal egg counts, pasture appraisal and advising landholders how to move and manage stock to reduce parasite loads. In 2005 she came to CSU as a lab manager for the School of Biomedical Sciences at Wagga and in 2007 was appointed a lecturer in forensics and microbiology. In June this year she was appointed the new sub-dean of teaching and learning in the Faculty of Science; a challenge she is looking forward to and as it will allow her to continue her research in the field of science education, her second “strand” of research.

Andrea, who is interested in the application of effective technologies in teaching science, won the international Teaching with Sakai Innovation Award in 2009. She has also written two book chapters: one on using vod-casts to teach microbial science; the other on on-line group work for teaching forensics.
In conjunction with Dr Ragusa, Andrea is currently analysing students’ use of resources and academics time demands for two large first year subjects in the Faculty of Science and the Faculty of Arts. “Not surprisingly the more on-line resources a student uses, the higher their grades,” says Andrea, adding that the fact she and Angela come from different disciplines works well. “The different viewpoints strengthen the end product. A lot of long car trips turn into research meetings.”

**PROF JOHN HICKS**

Now that the former Dean of CSU’s Faculty of Business Prof John Hicks has “retired” he’s looking forward to getting more involved in research after a career taken up mostly with academic administration.

“I wanted to be a researching academic but I never really have been,” says John, 59, who has a fixed term contract with the University until 2015 as a Professor of Economics. “I got into academic administration reasonably early and now there is an opportunity to redress that.”

He intends to do so as a member of the Institute, and, specifically as a member of its Strategic Research Area on “Sustainable business development in regional Australia.” As he says: “A lot of the research work we are doing is regional or will impact upon the regions. For the future I expect my work will largely involve what’s going on in the regions, looking at employment changes, labor market policy, some more work on nursing, and comparing the trade relations of Australia and China with the trade relations between Australia and India.”

John, who grew up in Melbourne’s western suburbs, was the “first generation” in his family to go to university, namely the University of Melbourne where he did an Honours degree in Economics; a Diploma of Education; and then a Masters degree in Economics. On a teaching scholarship while studying, John was seconded from the Education Department to tutor in Economics and Statistics at the University of Melbourne from 1974 to 1976. He then went to Simon Fraser University in Canada as a teaching assistant for a few months where he began his PhD, returning as a senior tutor in 1977 to the University of Melbourne.

A job as a lecturer in Economics at Massey University in New Zealand followed and John spent eight years at Massey, completing his PhD on unemployment in New Zealand in 1984. In 1986 he returned to Australia as a principal lecturer (Economics) with Chisholm Institute of Technology before it became Monash University. In 1990 he was appointed an associate professor, and then a professor. From 1988 to 1992 he held a concurrent position as a senior economist with the Institute of Public Affairs during a period of substantial deregulation of the Australian economy. In 1993 John joined CSU in Bathurst as Dean, Faculty of Business, retiring from that position in September last year.

Most of John’s early research activity, and again in recent years with research assistant Dr Dick Sappey has been in labor economics and industrial relations. “Dick, PK Basu and I form a pretty good team,” says John “but Dick and I have also branched out into a couple of areas pertaining to labor economics in regional Australia looking at old workers, old farmers and nurses.” Earlier research (and the resulting papers) that John has been involved in included access to Kingsford Smith Airport by regional airlines; petrol pricing in rural Australia; and the problem of getting social welfare services to older farmers “who can’t sell their farms to their kids because the kids can’t afford them as the farms aren’t making any money.”

The most recent work that the team has been doing on a consistent basis is its work with China. “We’ve written a fair bit about the proposed Fair Trade agreement between Australia and China,” says John who has been a frequent visitor to China on University business since the mid 1990s. “We’ve added to that with an article on the growth prospects of China compared with the growth prospects of India which has been accepted for publication in Economic Papers. We’ve taken that a bit further and are now looking at the regional provinces in China and seeing if there are significant differences, and if there are, what implications that has for China’s continued growth and for Australia in general. From a parochial point of view China’s continued growth means our continued growth.”

This semester John has concentrated on a new research project on assisting transition in regional areas that are affected by drought and climate change with a particular emphasis on those areas that depend on irrigation. He expects that by the time the questionnaires for the project are written there will be several other researchers involved including Tom Murphy, the director of the Western Research Institute, and the institute’s Dr Branka Krivokapic-Skoko, Dr PK Basu, Dick Sappey and Prof Mark Morrison. “How many people will be involved will depend on what funding we get and what work needs to be done,” says John.

He and Dick Sappey are also involved in a fairly significant project on disaster management that includes staff from the School of Policing Studies (Valerie Ingham, Ian Maddock and Rabiul Islam). The project, which has been given CSU Competitive Grant funding, will look at case studies in Australia and Bangladesh. Other work that John has been doing has been on the economics of terrorism using game theory to analyse what appropriate strategies might be. “I’m hoping to present a conference paper on that next year which basically indicates that Howard did the right thing in supporting the United States,” says John.

For the long term future John says if he gets involved in areas of research that he thinks are worthwhile and he’s enjoying it, he doesn’t see any reason why he would stop being involved.

**POST-GRADEuates**

**PHD NEWS**

Three ILWS students presented their completed thesis in person to the University’s Centre for Research and Graduate Training at Wagga on August 5. They were:

- **Alison Matthews** whose topic was ’Change climate influence on the distribution and resource use of the common wombat in the Snowy Mountains.

- **Janet Cohn’s** on ’Consideration of community values in regional natural resource management.

- **Eloise Seymour’s** on ’Consideration of community values in regional natural resource management.

(Below) Alison Matthews, Janet Cohn & Eloise Seymour
Wayne, who started his PhD in February this year with supervisors Dr Digby Race, Institute adjunct Barney Foran and Dr Mark Howden from CSIRO, was travelling in Thailand when he decided to go into academia. In 1994 he enrolled in an Associate Diploma in International Trade at RMIT and then did a double major in anthropology at the University of Melbourne. His Honours topic was “Salinity in the Murray Darling Basin as an anthropological problem.”

Wayne then commenced a PhD in anthropology at ANU, conducting fieldwork in a small village of approximately 1000 people on the island of Cheju in South Korea after receiving a Korean Government scholarship. His work focussed on the interplay between village agriculture and economy inside the constraints and opportunities of international trade. Women of the island have traditionally taken on the dual roles of farming and sea-diving. The heavyo (literally-sea woman) dive for up to six hours a day, scouring the communally owned seabeds that abut the village for shellfish, molluscs, seaweed and whatever else they can lay their hands on. “This work provides an alternative income stream for families, but it is a dying craft, as neither the mothers nor daughters now wish for its continuance” says Wayne.

After a year in Japan, he returned to Canberra intending to write up his thesis. However he was unable to complete it. He then worked for the Australian Institute of Aboriginal and Torres Strait Studies (AIATSIS), spent three years in Japan and in 2007, as a research fellow with Melbourne University’s School of Land and Food Resources monitored and evaluated the Master Tree Grower Program, a rural education and extension program that facilitates landholders in the design, establishment and management of vegetation.

For his PhD with ILWS, Wayne will employ a systems theoretical approach to examine the role of farm forestry and vegetation in S.E. Australia in providing liveable landscapes for future generations in a variable and changing climate. The examination is brought into focus by the emerging nexus of climate, energy, water, waste, food and fibre, and human well-being,” explains Wayne. “The issue is set against a range of wicked problems such as anthropogenic global warming, asset depletion, soil water and air degradation, loss of habitat and biodiversity, population and community. “It’s very ‘big picture’ and in many ways I’m working in similar areas to Barney.”

MANU SAUNDERS

Each year, thousands of bee hives are brought to the big almond orchards near Mildura and Robinvale in NW Victoria so that the bees can pollinate the almond blossoms, as almonds rely completely on insect pollination to set nuts.

But the big concern is what happens if some of the world’s major bee threats, such as Colony Collapse Disorder and Varroa mites, finally reach Australia’s shores and decimate our populations of European honey bee.....what then? Will there be native pollinators around that can do the job? Hopefully there will be and once PhD student Manu Saunders, 28, has finished her research, we will have a much better understanding of who does what.

Manu, who is an ILWS PhD scholarship recipient, is looking at pollination in agricultural landscapes. Her PhD is aligned with A/Prof Gary Luck and Dr Peter Spooner’s ARC Discovery project, Designing Landscapes to Deliver Ecosystem Services to Agriculture, an ARC Linkage grant with large almond producer Select Harvest, and Gary’s ARC Future Fellowship on ecosystem services.

Manu, who grew up on Queensland’s Sunshine Coast, went to the University of Queensland in Brisbane after high school where she did a Bachelor of Arts in English Literature and Journalism. She then worked in Sydney for a year in corporate communications before deciding to travel “around a bit” and ended up working as a governess at a cattle station near Longreach. “I’d always been interested in the outdoors and agriculture but working out there made me realise how passionate I was about that field,” says Manu. “So I decided I wanted to do something that would lead me to a career that would involve writing more about environmental issues rather than just general journalism.” Manu then enrolled, again at the University of Queensland, in a Bachelor of Environmental Science, majoring in ecology. Her Honours project was on developing a methodology to evaluate the success or otherwise for a biological control agent released by the Queensland Department of Primary Industries and Fisheries for the weed, Cat’s claw creeper (Macfadyena unguis-cati). The methodology has now been adopted by the department for future evaluations and Manu is a co-author on a paper just published in the journal Biological Control.

After her Honours she worked for her supervisor Dr Margie Mayfield at the University of Queensland on a casual basis before taking on a five month job with QDP&F researching stored product pests such as beetles that infest grain silos. In March this year she began her PhD under principal supervisor A/Prof Gary Luck, Dr Mayfield and Dr Geoff Gurr who is based at Orange. “I’m looking at the various elements of landscape structure and how they affect pollinators,” says Manu who is focussing initially on pollinators in almond orchards, and how they are affected by the different landscapes around them. So far Manu, who has just completed three sampling trips, has looked at four different farms – two of which are large scale conventionally managed orchards and two smaller biodynamic farms. The native pollinators she is looking for include native bees, wasps, hover flies, flies, butterflies….. “There are issues with the longevity of the European honey bee in Australia so for the almond industry, which is worth a lot of money to Australia, it is important to know if there are native pollinators that can pollinate almonds,” explains Manu.

For life after her PhD Manu says it is too early to know. “The things I am interested in are teaching and communicating,” says Manu who has started her own blog on environmental issues at http://manuelinor.wordpress.com. “I never wanted to be a school teacher but you can teach people through writing.”

(Below, Manu out in the field)
Ecologists across Australia, and indeed many more of us, are concerned about the impact that climate change will have on Australia’s unique plants and animals.

Experiencing the performance of widespread long-lived plant species can give us a good indication of changes Australia-wide. This is the basis for PhD student Janet Cohn’s study on “How the dynamics of woodland dominants are influenced by climate and disturbances in South East Australia.” Janet, who has just submitted her thesis after four years and more than 6000 km of travel, has made some valuable findings which will help us predict what may happen to our woodland forests west of the Great Divide, from the temperate to the arid zone.

Janet has always loved the outdoors, bushwalking, animals, nature and the like. But it was as a child, still in Primary School, that she decided she wanted to work in the ecological field after seeing an article in *National Geographic* on primatologist Jane Goodall and her work with chimpanzees. After high school at Bathurst, Janet did her Bachelor in Natural Resources (Wildlife Ecology) at the University of New England in Armidale before her first (and, as it has turned out, only) job with the NSW National Park and Wildlife Service (now the Department of Environment, Climate Change and Water) based at head office in Sydney. Janet has always worked in a research role. Her early research work in the early 1980s, with Dr Dan Lunney, was on the effects of logging on wildlife in the Bega area of NSW.

“Then, the Chief Scientist with the Department felt that the Mallee region of NSW was under-studied,” he directed four of us to pursue research in this region,” recalls Janet who looked at the post-fire success of seeding establishment of the dominant understorey species in the Mallee. “We were looking at the effects of grazing by rabbits, kangaroos and goats on spinifex and a number of acacia species.” Janet has also been involved in a number of projects including the mapping of vegetation in national parks and research on the distribution and population dynamics of a range of rare and endangered plant species. After A/Prof Ian Lunt successfully applied for an ARC Linkage Grant with DECC in 2006 on woodland stand dynamics, Janet, who had read Ian’s work and was interested in working with him, applied to do her PhD, taking leave without pay from her position with the Department’s Fire Ecology Unit. Ian is the team leader of the project “Managing tree densities in western New South Wales: development of a process-based model to predict woodland dynamics” which includes post-doctoral research fellow Dr Karen Ross, and Prof Ross Bradstock who is from the University of Wollongong and is Janet’s co-supervisor.

The study species, *Callitris glaucophylla* (commonly known as white cypress pine) and a range of Eucalyptus species, are dominant trees in woodlands of SE Australia. Callitris is a slow growing, shade tolerant non-resprouting conifer, while Eucalyptus are fast growing, shade intolerant, resprouting angiosperms. Janet looked at three questions, all at different scales. The first of these, at the largest scale, was “How demographic patterns of Callitris are associated with rainfall and disturbances along rainfall gradients.” She chose white cypress pine as it is widespread throughout Australia so is ideal to study for its establishment success in different climates and in relation to disturbances such as grazing. Janet focused on the species in NSW, where it extends the length of the state, west of the slopes. From west to east the climate ranged from arid to semi-arid to temperate and from south to north, seasonal dominance in rainfall changed from winter to summer.

“By studying the establishment success of this species since the 1950s under different climatic conditions, allows us to make predictions on its distribution and other similar woody species as climate changes in the future,” explains Janet.

Janet has found quite different establishment success rates across the state. In the south-west below 400 mm annual rainfall, there has been no recruitment since the 1890s. “It’s the ‘living dead zone’ for Callitris because of low rainfall predominantly in winter and grazing by rabbits and livestock,” says Janet. Despite similar annual rainfall to the north, greater establishment success of Callitris is associated with summer rainfall and an infrequency of rabbits. Above 400 mm annual rainfall, Callitris establishment is successful, where there are refuges from high levels of grazing by livestock (e.g. fenced roadsides, TSRs such as State Forests, National Parks) and rabbits are less frequent. As global warming increases in intensity and frequency, the threshold in Callitris survival at 400 mm annual rainfall in the SW may shift further east, if cropping loses its viability and grazing becomes the predominant land use.

Woody species including Callitris have increased in density in semi-arid regions. “In my second question I was trying to understand whether the historical removal of Eucalyptus and Callitris canopy trees may have contributed to Callitris encroachment,” says Janet. “Tree removal releases more resources to the understorey, reducing competition for water, nutrient and light. I also wanted to see whether dense Callitris recruitment reduced the survival of canopy trees during drought.” For this question she concentrated on six state forests between Parkes and Lake Cargelligo in central NSW. Although Janet found a higher density of Callitris saplings in gaps than under tree canopies, the difference was not great. “Callitris saplings, which recruited in the 1950s, have remained in dense stands either under canopies or in gaps for over 50 years, although many saplings died during the recent drought.” It is also likely that the dense recruitment of Callitris has contributed to the sparcity of Eucalyptus sapling recruitment. In turn, dense Callitris recruitment reduced the survival of Callitris canopy trees and increased stress levels of Eucalyptus canopy trees during the recent drought. As droughts increase and aging canopy trees die, Eucalyptus may be lost from the system because they are not being replaced by younger Eucalyptus.

Callitris and Eucalyptus respond differently to fire. Callitris are fire sensitive non-resprouters and Eucalyptus are fire-tolerant resprouters. For her third question, Janet looked at how Callitris survived in flammable Eucalyptus woodlands. Janet did her study in the Pilliga State Forest where there had been a fire in 2006. The fire burnt under two different fire-weather conditions in different areas; one of which was in extreme fire conditions for 24 hours; the other in low to moderate fire conditions for over two weeks. Janet found that in low-moderate fire-weather conditions, fire intensity was lower in dense patches of Callitris than in the Eucalyptus matrix where Callitris were less frequent. Consequently, Callitris survival was higher in Callitris patches. Other studies have shown that Callitris leaf litter has lower flammability than Eucalyptus leaf litter and this is likely to have contributed to the different fire intensities experienced in these vegetation types. In contrast, in extreme fire-weather conditions fire intensity was similarly high in Callitris patches and in the Eucalyptus matrix resulting in universally low Callitris survival. If extreme fire-weather days increase, as predicted, resprouting Eucalyptus are likely to be favoured over non-resprouting Callitris. Now that Janet has finished her PhD she will be returning to the department’s Fire Ecology Unit in Hurstville, Sydney. “I feel fortunate to have had the freedom to pursue ecological questions which are of interest to me and have wide ranging implications,” says Janet. “In doing so, I have acquired a range of skills that I can use where ever I go and what ever I do.”
VISITORS & VISITS

POST-GRADUATES (cont.)

KRISTY GRAHAM

PhD student Kristy Graham is back on track to finish off her PhD looking at approaches to risk preparedness for cultural heritage in NSW.

Kristy, who visited the campus at Thargoona in September to catch up with her principal supervisor A/Prof Dirk Spennemann, enrolled as a PhD with the then Johnstone Centre in 2003 following from her undergraduate studies - Bachelor of Applied Science (Eco-tourism), and then honours in Parks, Recreation and Heritage. Initially she did a lot of her research for her PhD off-campus but in 2004 got a part-time job as a heritage consultant with a firm in Canberra, something she describes as “a very beneficial, positive experience.” But then, as she says “life happens” and she put her studies on hold while she took on a full-time job as a heritage officer with one of the Commonwealth departments in Canberra. More recently she worked as a senior policy officer addressing domestic heritage issues with the Department of Environment, Water, Heritage and the Arts (DEWHA).

Kristy, who left DEWHA a few months ago, now has another full-time job as a heritage advisor with another Commonwealth department. However she is determined to finish her PhD and plans to submit by March next year. “Risk preparedness for cultural heritage can often be a very complex and overwhelming issue for those managers caring for historic heritage places,” says Kristy. “It is largely regarded as an issue that needs attention but because on the onset it looks so complex and difficult to address, it doesn’t tend to be elevated on a day-to-day priority but rather is viewed as a long term issue that needs to be addressed at some stage.” Consequently, as a result of her PhD, she aims to present a framework in which managers can take that step into developing a plan and implementing it. “It is a framework which takes things like the Australian Risk Management Standard and relevant Commonwealth and State legislation recognising the requirements but also the inherent limitations in what those independent structures can achieve,” says Kristy. “The framework actually does all that strategic focussing for the manager of a heritage place so they don’t have to go to that very beginning starting point every time. It allows them to customise the fields so they can meet their business and heritage conservation requirements.”

VISITORS & VISITS

Catching up with A/Prof Ian Lunt at Thargoona in September was researcher, Heidi Zimmer (Left) from the Department of Sustainability and Environment’s Arthur Rylah Institute which is based in Heidelberg, Melbourne.

Heidi is working on a new project looking at the impact of the 2009 bushfires on the fire sensitive Black Cypress-pine, Callitris endlicheri, in the Flagstaff Ranges near Beechworth, Victoria. The project is one of 25 natural values recovery projects funded by the Victorian and Commonwealth governments’ ’Rebuilding Together’ – Statewide Bushfire Recovery Plan aimed at helping fire-affected plants, animals and ecological communities recover after the 2009 bushfires. “The project question is ‘Can sensitive vegetation recover from fire?’ with the study species Callitris endlicheri,” says Heidi. The project, which was initially focussed on small stands of Black Cypress-pine, will run until June next year. However, the intention is to set up the Flagstaff Ranges burnt Black Cypress-pine site for long-term monitoring. As Ian has data he and CSU students have collected annually on the recovery of the species since the 2003 fires in the Chiltern Mt Pilot National Park, it made sense to collaborate with Ian and utilise these data for the (now joint) project. “One of the key questions is how useful is fencing to help black cypress pine seedlings survive, and what is the impact of grazing on seedling survival?” explains Heidi. “With our project having a short time frame that’s a difficult question to answer so Ian’s long-term data span is very useful.” The project also seeks to determine threats to the species from future fires and on-ground recovery works. Heidi who will be writing a report for the Department on the project says she will be able to draw extra conclusions by using Ian’s excellent data. “It will be great to co-write a paper that goes into more detail than was originally anticipated for the Departmental report, and that contributes to a wider scientific understanding of how fires affect cypress stands,” says Heidi. And as Ian says, “This is a great opportunity for ARI to add value to the data that CSU students have collected over the past seven years, and also to have our data address questions that are of direct practical relevance to Victoria’s principal fire management agency.”

CHINESE VISITORS

Three visiting Chinese academics were at Bathurst and Wagga campuses recently where they delivered seminars on “Manufacturing and environment in China; Trade, Growth and Environment in China; and Agriculture and rural growth in China.”

The three were here to work with the Institute’s A/Prof Kishor Sharma and other CSU researchers in line with Kishor’s grant from AusAid to investigate the link between trade, growth and environment in China. Kishor is investigating the environmental implications of China’s economic growth using the Input-Output (I-O) technique, which enables researchers to estimate sector-specific pollution and design policy accordingly.

VISITING RESEARCH FELLOW

It’s great to see Institute researchers sharing their knowledge with colleagues from overseas and vice versa. The Institute’s latest visiting research fellow is fish and freshwater ecologist Dr Hubert Keckeis from the University of Vienna’s Department of Limnology in Austria. Hubert, who arrived on October 5, is in Australia and is based at Thargoona for two months where he is working with Dr Paul Humphries on dispersal mechanisms for fish larvae in rivers.

The visit is a follow-up to Paul’s visit to Vienna two years ago where they did a small project on the River Danube. An outcome of this project was an application for a major scientific project which has just been approved. Hubert said the three year project, which will commence in January next year, is again looking at dispersal mechanisms for fish larvae. Universities involved in the project are the University of Vienna and the University of Natural Resources and Life Sciences, Vienna. “We will be conducting these experiments in the Danube looking at how fish larvae at different developmental stages are affected by different hydrological conditions including flow velocity, turbulence, the amount of flow and the physical condition of the flow, and discharge of the river,” says Hubert. “We will also be looking at larvae behaviour, which is different at the different developmental stages, and the interaction with the environment.”
Hubert says this information is important so that restoration plans for the Danube are successful. He says the collaboration with Paul (who will be involved in the new project and return to Vienna next year) has come about because Paul is well-known for his larvae drift work in rivers. While in Australia Hubert has been:- working with Paul and Dr Kevin Warburton’s Honours student Tim Kaminskas who is making experiments in a fish flume investigating how sunlight affects larvae drift; analysing growth data for larvae (part of a long-term monitoring project of Paul’s); and working on a paper with Paul “but I hope that another one will appear.” He will also be giving a seminar in November. Before he heads back home Hubert’s wife will join him for a holiday in Tasmania with their four year old son.

INSTITUTE EVENTS

Three Institute events have been held over the past couple of months. They were:

WATER ON TAP?
The Water On Tap? Exhibition which opened on October 14 and is on at the Albury Art Gallery until December 12, brings together science, art and practice. ILWS Social scientist Dr Penny Davidson said she organised the exhibition as a way of sharing information about the research around water undertaken by the Institute and its scientists with the community. “We do a lot of research around water but are we really sharing that information with the community who, particularly as a result of the drought, are also concerned about water and would like perhaps to better understand the importance of the links between humans and all living things and water?” said Dr Davidson. The exhibition, which celebrated National Water Week includes photography, textiles, mixed media, sound, sculpture, information panels, video and a computer generated flyover of the Murray River. The three sponsors are the Murray Catchment Management Authority, the ILWS and Albury City. “The art, not only helps tell the science story, but provokes all of us to think a bit differently about water and offer new insights,” said Dr Davidson.

BOOK LAUNCHES

Three books published by Institute members in 2010 were launched at a morning tea on October 18 at Thurgoona. The books were:

- Demographic Change in Australia’s Rural Landscapes: implications for Society and the Environment which was edited by Gary Luck, Digby Race, Rosemary Black and published by Springer and CSIRO Publishing. A number of the chapters in the book were written by ILWS researchers, many of whom come from different disciplines.
- Community Development in Asia and the Pacific, by Manohar Pawar and published by Routledge, New York

Professor Manohar Pawar described how the process of research for a conference paper led to 21,000 words, too many for a journal article, but the start of his writing a book on Community Development in Asia and the Pacific. He also reflected on the satisfaction derived from working on his second book, a collaborative effort with Adjunct Prof David Cox of LaTrobe University. A/Prof Gary Luck said that the first book he has edited, Demographic Change in Australia’s Rural Landscapes, was five years in the making and was an example of the integrated research the Institute strives to do. It, along with a forum ‘The changing nature of our rural neighborhoods’ held in November 2008, were outputs from the Institute’s former ‘demographic change in rural areas’ integration group.

BIODIVERSITY DISCOVERY DAY

In celebration of the Year of International Biodiversity, a fun day to raise awareness in the community of why we should and how we can help enhance biodiversity in our region was held at the Orange Botanic Gardens on Oct 17. The day, which was organized by Dr Cilla Kinross included nature based games and competitions for families and children, talks for gardeners and farmers, talks on CSU research on helping communities to devise strategies to improve biodiversity and biological /ecological survey equipment demonstrations.
**PROBLEMS**

JUST HOW SAFE IS RURAL DRINKING WATER?

Not as safe as we would like to think according to the results of a research project conducted by Dr Andrea Crampton and Dr Angela Ragusa which involved testing water samples, surveying how people managed their water and phone interviews on participants’ perceptions and concerns related to drinking water.

Data collection for the project, which was funded by a CSU Faculty of Science seed grant and an ILWS research fellowship, was done last year. Andrea collected 50 samples of tank, bore and spring water that people were using as their main source of drinking water from across the region as far north as West Wyalong in NSW and as far south as Yackandandah in Victoria with the majority of the samples collected from the Woomargama – Holbrook area. “Over 50% of the samples had levels of E. coli greater than that deemed suitable for drinking under the Australian drinking water standards,” says Andrea. “However these standards are not normally applied to self-managed water systems.” She found one sample tested was 230 times over the acceptable limit. “That person is now buying bottled water for their young family members who visit,” says Andrea. She says while it is not unexpected to find high levels of bacteria in the water in a rural area in drought, there is concern that the source of bacteria might not just be from bird droppings or possums but from larger mammals as the faeces dries up and becomes airborne through dust storms. “This then lands on the roofs that people collect rainwater off,” says Andrea. “There have been recent examples of disease situations of pathogens transferring from large mammals to humans. The concern is that in rural areas, where you have large concentrations of livestock, the level of bacteria in the air may include some that could be pathogenic to humans.”

The research project also looked at what people did and what people knew about the safety of their drinking water. “A lot of people had safety measures in place, such as first flush diverters, but weren’t necessarily using them correctly,” says Andrea. “A lot of people were more concerned about chemical spray drifts from agricultural practices onto their roofs.” Andrea says even though the information about how to minimise the risk of contaminated drinking water was available i.e. boil the water before drinking it, most people didn’t know there was a risk or what to do about it. “No one wanted more involvement by the Government other than perhaps free, or suitable priced testing of their water on a regular basis,” says Andrea. “They still wanted to manage their own risk.”

Andrea says she has contacted NSW Health and told them of the disparity of information. She says she was surprised at the levels of contamination. “But what was perhaps was more surprising was the lack of concern that people had but then they are right in their assumption if you grow up with it you do develop an immunity to it. You are more concerned about bigger threats.” She says the concerns were more for the very young and the very elderly, especially those visiting, and anyone who is immune compromised.” Two other species of bacteria that she looked for were salmonella and campylobacta “which fortunately we didn’t find. However E.coli is an indicator of faeces contamination and there were a lot of bacteria and viruses we didn’t test for.”

COMMUNITY RESILIENCE

It is inevitable that natural disasters will continue to happen, more so in the future, it is predicted, in the light of climate change.

Therefore a new research project which will look at community resilience to natural disasters in the face of climate change should prove very useful in future scenarios. The two year project, which has been funded by the Federal Department of Climate Change, involves ILWS members Dr Joanne Millar, Dr Maureen Rogers and Prof Max Finlayson. The project, which is in collaboration with James Cook University in Queensland, focuses on four case studies – in North Queensland, the floods that affected Ingham in 2009 and the devastation as a result of Cyclone Larry on Innisfail in 2006; the bushfires that affected Beechworth in North-East Victoria in 2003 and again in 2009; and the drought that has impacted on Bendigo for the past five years. Dr Helen Boon is the chief investigator for the Queensland research; Dr Joanne Millar for the research in Victoria. Information for all of the cases studies will be gathered via focus groups, interviews and a mail-out survey.

For Maureen, who has been employed as a research officer for the Victorian case studies, the work follows her previous job with the Institute as a post-doc working on a landholders’ adaptation to climate change project with Prof Allan Curtis, Dr Nicki Mazur and Dr Rik Thwaites. Maureen, a social researcher, has strong links with Bendigo having worked for La Trobe University’s Centre for Sustainable Regional Communities, based at Bendigo, for more than a decade before moving to Albury/Wodonga region. “The aim of the project is to test some indicators of resilience so that by the end of the projects we can say a community is more likely to be resilient to a natural disaster if it has certain qualities or factors,” says Jo. “It’s also about preparing for the future, understanding the things that are required by communities so that they feel they can cope,” says Maureen. The goal of the project is to give DECC appropriate and equitable emergency management policies and mitigation strategies for climate change events.

The project, which commenced in July, will also look at people’s beliefs and behaviours in relation to climate change. “It will also look at whether people’s perceptions of climate change have changed as a result of having been exposed to a natural disaster,” says Jo. “Are they more likely or less likely to believe that the natural disaster was due to climate change and is there any evidence that people are showing adaptive behaviours, being better prepared and able to respond to climate change?” The researchers say that Indigo Shire (Beechworth), the Country Fire Authority and the Department of Human Services are “on board” for the project. Bendigo has already done quite a lot of work already to try and understand what has been going on in the community in terms of drought, though from what I understand so far most have focused on farming communities rather than the urban community,” says Maureen.

**PUBLICATIONS**

PEER-REVIEWED PAPERS


Samimi-Duncan, S., Duncan, G.W., & Lancaster, J. (2010), The factors that facilitate and impede collaboration between pre-service
teachers during a paired-practicum in a school-based environment, The International Journal of Learning, 17(3), 143-162


BOOKS


BOOK CHAPTERS


Muenstermann, I. (2010) Too bad to stay or too good to leave? Two generations of women with a farming background—what is their attitude regarding the sustainability of the Australian family farm? In Luck, G., Black, R. and Race, D. (eds) Demographic Change in Rural Australia: Implications for Society and the Environment, Springer, Netherlands


PUBLICATIONS (cont.)


CONFERENCE PAPERS/PROCEEDINGS

Hicks, J., Basu, P.K & Sappey, R.B. (2010) Transformational Change in Climate Change Impacted Regions. SEGRA 2010 Conference in Townsville, Oct 19 to 21


TECHNICAL REPORTS


GRANTS
RESEARCH GRANTS
Sharma, K. (2010) Liberalisation, Growth and Economic Change in China. AusAid, $85,000

Millar, J. (2010 to 2013) Diversification of smallholder coastal aquaculture in Indonesia. Australian Centre for International Agricultural Research (ACIAR) Collaborator with University of Sydney, $64,000

Prof Mark D Morrison, Prof Dennis L Foley, Prof Jock H Collins, Dr Branka Krivokapic-Skoko, Dr Panikhrit K Basu, Mr David K Brudenall, Mr Matthew B Nogrady, Ms Anne M Redman (2011 to 2013) Determining the factors influencing the success of private and community-owned Indigenous businesses across remote, regional and urban Australia. ARC Linkage grant with partners Cultural and Indigenous Research Centre Australia, Indigenous Business Australia. $254,682

AWARDS & APPOINTMENTS
Prof Max Finlayson has been appointed one of two Coordinating Lead Authors of the biodiversity chapter of Global Environment Outlook-5 (GEO-5), an assessment of the world’s biodiversity conducted by the United Nations Environment Program.