New Projects

Members of the Institute's Sustainable Water SRA have been successful in obtaining two of the seven projects that are the focus of the Commonwealth Environment Water Office's $30 million Long Term Intervention Monitoring (LTIM) Program.

The two projects, for the Edward-Wakool and Murrumbidgee River Systems will run over a five-year period and have a combined value of $6.86 million. The respective projects are led by Associate Professor Robyn Watts and Dr Skye Wassens.

Read more about these exciting new projects on page 4.

Biodiversity Conservation SRA

The collaborative research being undertaken by a group of the Institute's terrestrial ecologists since 2007 has been formalised. Read more on page 14.

Events

The Institute has been involved in three major events over the past few months.

First was the launch of the Our Place project held on the Albury-Wodonga campus on Monday, August 18. The project was launched by South-West Regional Manager for the NSW Office of Environment and Heritage (OEH), Mr Graeme Enders and attended by 55 community members.

Second was the Climate Change and the Community Forum held on Tuesday, August 19 at the Albury Entertainment Centre which drew a crowd of more than 120 people.

And third was the Getting on the Rails symposium at the Albury-Wodonga campus on Wednesday, September 17 which was attended by 28 representatives from regional councils and businesses, rail interest groups, transport consultants and regional transport committee members. From page 10.
Director’s Report

This is the last newsletter for the year, but by no means the end of the work.

In fact it may even be a time for the generation of wonderfully stimulating or invigorating ideas. It’s not just that we may have time, but it is also timely given that in 2015 we will be considering the reaccreditation of the university research centres/institutes as part of normal process.

We are also currently working through the data for the current national assessment of research excellence – known as ERA 2015 that is administered by the Australian Research Council (ARC).

ERA is an important part of our research assessment and planning both in terms of identifying areas of existing research excellence and areas we would like to strengthen.

In the previous assessments we received an above world standard for the multi-disciplinary research area of Environmental Science and Management. That was an excellent outcome for the university.

The ARC has also supported the development of Industrial Transformation Research Hubs and Training Centres that require substantive links with industry. The government seems to be reshaping the view about the way in which universities and industry work together, possibly with implications for research funding and assessment of success and excellence.

We have also recently seen a draft of the Research Narrative for CSU. The purpose of the Narrative was to provide an internal document to assist in framing the University’s ethos and rationale for research, to support the University Strategy, and provide more explanation for the University Research Plan.

It is not an implementation plan. It does identify research themes that connect the research activity of the University to its teaching profile and to the national common good. Some of the research themes are well developed and others are growing and in development.

The headings only are given here:

- agriculture, land and water;
- sustaining resilient healthy communities;
- regional development;
- cultivation of a civic & just society; indigenous research;
- education and professional practice.

We are often seen as fitting into the land and water space, but in reality we cut across all themes to one extent or other.

**series of conversations**

Adding the above together leads me to propose a series of conversations about the strategic directions of our research grouping(s).

I am very interested in chatting about our research directions and where we may continue to contribute to CSU’s research profile, and what type of activities may be worth pursuing or developing.

For example, are there
1. further opportunities for strengthening the interactions across the research themes identified in the Narrative
2. how do we respond to the wider implications of the ERA outcomes, or
3. are there further opportunities with the industrial transformation hubs and centres?

Or should we be considering something entirely different? I’m interested in the dialogue that comes from a relaxed chat, not an email exchange, nor receiving written treatises, nor bogging down with operational details. All that can usefully occur, and there will be opportunities as we move through 2015, but for the moment please contact myself to ‘coffee and chat’ individually, or with a few colleagues, and indulge in a dose of strategic foresight or horizon scanning so we can develop a suite of ideas that could inform our approach to research.

As a finale – a huge thank you to everyone involved with ILWS – our research and general staff, our partners, and funders, our adjuncts and many associates. We have had some big successes with all the usual metrics, not least the contracts just signed to support our environmental flows research, and it is getting close to the festive season which I hope you all enjoy.

On our recent trip back from WA we dropped in at Coffin Bay in South Australia where Neil got this snap of an emu and chicks wandering around the streets, checking out the driveways and houses..... Apparently not that unusual at all in that part of the world! -Ed
New Grants

External grants

Long Term Intervention Monitoring project - Edward Wakool Selected Area. Watts, R., McCasker, N., Howitt, J., Kopf, K with NSW Department of Primary Industries (Fisheries), Monash University (Water Studies Centre), Griffith University, NSW OEH, and Murray LLS. (2014-2019) CEWO, $3.36M (Details next page)

Long Term Intervention Monitoring project-Murrumbidgee Selected Area. Wassens, S., Hall, A., Wolfenden, B. with NSW Department of Primary Industries (Fisheries), University of NSW, Riverina LLS, and NSW OEH, (2014-2019) CEWO, $3.5M (Details next page)


Social factors influencing technology adoption in the rice industry. Higgins, V. & Bryant, M. (2014-2016) In partnership with Swinburne University, RIRDC, $129,000


This project will be administered by the University of Technology, Sydney. Dr. Krivokapic-Skoko will be working with Prof Jock Collins, UTS.

The project aims to provide, for the first time, a detailed understanding of the experiences of male and female humanitarian immigrant entrepreneurs in private and social enterprises in urban and regional Australia, and critically evaluate how these entrepreneurs help redress the settlement problems and socio-economic disadvantage of humanitarian immigrants and contribute to economic growth and social cohesion in Australia.

One key aim will be to further develop the theory of Diasporic entrepreneurship. The benefits are expected to include an evaluation of effective strategies and policies to improve existing humanitarian immigrant enterprises and to stimulate the creation of new humanitarian immigrant enterprises.

New Projects


The project will be administered by the University of Technology, Sydney. Dr. Krivokapic-Skoko will be working with Prof Jock Collins, UTS.

The major objective of the project is to investigate the social factors that influence technology adoption by rice growers across a number of examples including (but not limited to): new rice varieties; precision farming; electronic communication, and biosecurity practices.

Interviews will be conducted with growers and stakeholders across the Murrumbidgee Irrigation Area (MIA), Murray Valley Irrigation Area (MVIA) and Coleambally Irrigation Area (CIA).

This information will be used to identify key priorities for industry stakeholders to influence further technology adoption, as well as recommendations as to how these changes can be implemented.

Social factors influencing technology adoption in the rice industry. Higgins, V. & Bryant, M. (2014-2016) In partnership with Swinburne University, RIRDC, $129,000 – has also started recently.

The rice industry has engaged in a number of change initiatives involving technologies aimed at increasing on-farm production efficiency, water use efficiency and environmental management. While profitability is recognised as a key driver of change for rice growers, social factors, ranging from growers’ existing knowledge networks to the broader policy environment which influence their practices, can also act as significant barriers to, or enablers of, technology adoption.

Successful Applications

The Institute has been successful in its application to the Department of Environment to participate in the Environmental Research and Analysis Panel put forward by Prof Max Finlayson, which could involve a large number of ILWS ecologists, chemists and social scientists.

ILWS has been successful in four following themes:

- Biodiversity and natural resource management;
- Terrestrial, aquatic and marine ecosystem health;
- Conservation planning;
- Water quality.

Rice paddies in the southern riverina
ILWS leads two new Commonwealth environmental water projects

The LTIM project for the **Edward-Wakool River System** ($3.36 million) is led by the Institute’s Associate Professor Robyn Watts with the NSW Department of Primary Industries (Fisheries), Monash University, Griffith University, the NSW Office of Environment and Heritage (NSW OEH), and Murray Local Land Services.

The LTIM project for the **Murrumbidgee River System** ($3.5 million) is led by the Institute’s Dr Skye Wassens with the NSW Department of Primary Industries (Fisheries), University of NSW, Riverina Local Land Services and the NSW OEH.

“Our teams will be evaluating ecosystem responses to environmental watering in two of the seven areas in the LTIM program - the Edward-Wakool system and the Murrumbidgee system” says A/Prof Watts.

“Some of the data we collect will also contribute to a whole of Basin evaluation being undertaken by the Murray Darling Freshwater Research Centre.”

**Edward-Wakool project**

The Edward-Wakool system is a large anabranch system of the Murray River, and comprises a complex network of interconnected streams, ephemeral creeks, flood-runners and wetlands. It has a high diversity of native species and abundant areas of fish habitat, and historically had diverse fish communities which supported both commercial and recreational fisheries.

However, this system was highly impacted by poor water quality and lack of flows during the millennium drought, with several blackwater events resulting in widespread fish deaths. Commonwealth environmental water has been contributing to the recovery of this system since 2010.

This new five-year LTIM project builds on previous projects on water quality, ecosystem productivity, aquatic vegetation, fish and frogs undertaken in the Edward-Wakool system by CSU and partner organisations over many years.

ILWS staff involved in the Edward-Wakool project are A/Prof Robyn Watts, Dr Nicole McCasker, Dr Julia Howitt, Dr Keller Kopf and Mr James Abell, with Ms Nikki Scott and other ILWS staff providing assistance with contracting, communications and administration.

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Members of the Institute’s Sustainable Water SRA have been successful in obtaining two of the seven projects that are the focus of the Commonwealth Environmental Water Office’s $30 million Long Term Intervention Monitoring (LTIM) Program.

The five-year monitoring program (2014-2019) will focus on understanding the impact of Commonwealth environmental water in the rivers and wetlands across the Murray-Darling Basin. Both projects build on previous projects undertaken by Institute researchers and partners.

“Charles Sturt University’s involvement in these projects highlights our key role in undertaking projects in collaboration with partner organisations in the regions, and is a testimony of our commitment to regional engagement and sustainability”.

-Professor Andrew Vann, Vice Chancellor, Charles Sturt University.

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The LTIM project for the Edward-Wakool River System ($3.36 million) is led by the Institute’s Associate Professor Robyn Watts with the NSW Department of Primary Industries (Fisheries), Monash University, Griffith University, the NSW Office of Environment and Heritage (NSW OEH), and Murray Local Land Services.

These projects will build on previous projects undertaken by CSU and partner organisations in these two river systems over the past 10 years.

“Receiving funding for five years is really important,” says A/Prof Watts. “While some of the responses to environmental watering will occur over short time frames, we expect other responses will be over the long term so it may take several years to see a response. There are relatively few opportunities to be involved in longer-term studies, so we are very excited to be involved in these new projects”.

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Edward-Wakool project

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ILWS staff involved in the Edward-Wakool project are A/Prof Robyn Watts, Dr Nicole McCasker, Dr Julia Howitt, Dr Keller Kopf and Mr James Abell, with Ms Nikki Scott and other ILWS staff providing assistance with contracting, communications and administration.
“CSU along with partners NSW DPI (Fisheries), Murray Local Land Services, Monash University, Griffith University and the NSW Office of Environment and Heritage have a long history of working in partnership with the Commonwealth Environmental Water Office, state agencies, other stakeholders and community groups to adaptively manage these river systems to improve ecosystem outcomes,” says A/Prof Watts.

“The main focus of this new project in the Edward-Wakool system is the fish community, breeding, and recruitment, but in addition we are examining water quality, connectivity, primary productivity, vegetation, and reproduction and recruitment of other organisms.”

Some of the indicators, sampling sites and approaches used in this new project have been modified from previous projects in this system.

“After reviewing the results from past short-term studies, and in consultation with stakeholder groups such as the Wakool River Association and the Edward-Wakool Angler Association, we have increased monitoring in the mid sections of the Wakool River, because that area has more in-channel geomorphological features such as backwaters, flood runners and anabranches that can be connected during environmental watering actions” explains A/Prof Watts.

“Inundation of these features during environmental watering can lead to increased river productivity and an increase in the availability of slow flowing habitat favoured by small fish and other organisms”. 

adaptive management

The project is already contributing to adaptive management by;
• Reporting on the outcomes of environmental water
• Contributing to the management and delivery of environmental water
• Informing and engaging the community

“The long-term data we collect through this project will enable us to undertake statistical modelling to predict and evaluate responses to Commonwealth environmental watering” says A/Prof Watts.

Retrieving a larval fish trap from the Edward River - pic. J. Abell

“This project will create a long-term data base that will enable us to answer other research questions that are currently outside the scope of this project.

“Researchers involved in the project will be able to undertake complementary projects alongside this one, and supervise PhD and Honours students who will gain the benefits of having access to the large dataset to help underpin their research questions.”

A/Prof Watts says Australia is a world leader in monitoring and evaluation of ecosystem responses to environmental water, so the Commonwealth government funding for this five year monitoring projects will further strengthen Australia’s position in this field.

“A number of countries have plans and regulations for environmental watering but many have not yet secured the environmental water holdings or have everything in place to start delivering and monitoring responses to environmental water.

“This project will assist other countries develop environmental watering plans and monitoring for their river systems. The findings from our project will inform other catchments in Australia and internationally about environmental watering.

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Murrumbidgee project

In the Murrumbidgee selected area (from Narrandera to Balranald) the new project continues many of the key monitoring activities such as wetland fish and frogs that started in 2008 under a NSW OEH led project.

“However, for the LTIM project, there has been an expansion of the number of sites where some indicators are being monitored,” says Dr Wassens. “For example the monitoring of responses of vegetation to wetting and drying patterns is now being extended across from the mid-Murrumbidgee wetland systems to include Lignum and River Red Gum wetlands through the Lowbidgee floodplain.”

The new project also has provided capital investment to establish water depth loggers and a weather station network.

“This will give us more consistent daily records of water depth changes and weather patterns that we can use as a covariate when we model ecological responses,” says Dr Wassens.

The LTIM framework for the Murrumbidgee also includes some optional ‘on-demand’ components that are funded by the CEWO.

“For example, if there is a waterbird breeding event we can access funds to monitor these events,” says Dr Wassens. “Dr Ben Wolfenden and I already have also received funding from the optional budget to undertake research on the biogeochemical and ecological outcomes of return flows in 2014-15.”

Dr Wassens explains that return flows mean rather than just putting water onto a wetland and letting it dry out, it was about running water through the wetland and then letting the water go back into the river.

“The CEWO are trying to reproduce the natural ecological processes that occur during natural high flow events which connect wetlands to the river, but in a very controlled way,” says Dr Wassens. “The Murrumbidgee Selected Area contains three nationally significant freshwater systems- the Murrumbidgee River, the mid-Murrumbidgee wetlands and the Lowbidgee floodplain,” says Dr Wassens.

“In order to evaluate ecological responses across these three areas we have included a mix of broad and fine scale indicators and have developed a highly integrated design.”

In the Murrumbidgee River the focus is on metabolism, chlorophyll, macroinvertebrates, nutrients and carbon, larval fish and fish communities. The wetland components are the same as the river, but also include vegetation, frogs and tadpoles, and waterbird diversity.

whole-of-system response

“By setting it up this way we can model a whole-of-system response and look at the linkages between the different components,” says Dr Wassens. “We already have five years of data for a lot of these wetlands, so by the end of this project we will have 10 years of data. It will give us a really good long-term and comprehensive data set.

“Because the LTIM project is quite a rigid program we are viewing it as a ‘scaffold project’ and within the scaffold project there is a whole lot of other components we can build in. A capacity to inegrate new components into the program was a key consideration when setting up the Monitoring and Evaluation Plan for the Murrumbidgee. The certainty of funding enables us to employ Post-doctoral Fellows and PhD students, such as Kendal Krause. Her work isn’t directly linked to the project but is answering some of the questions that get thrown up. We also have a Masters coursework student doing macroinvertebrates, and our new research assistant Bradley Clarke-Woods (see story on page 21) is doing some research on bats to align with the project.”

The team communicates their findings regularly to the Environmental Water Allocation Reference Group (EWARG). It works closely with State and Commonwealth water managers to design, implement and assess watering actions through the Murrumbidgee.

“This is a big advancement on how these kind of things were done historically when it was very much agency-based,” says Dr Wassens. “Now CEWO are engaging researchers and there is a much more emphasis on evaluation.”
“This funding represents a fantastic opportunity to extend the research that has long been undertaken through the Science Faculty and ILWS, and is a public measure of the successes of all those involved.

“It is addressing a vital part of an important national program to restore the river systems of the Murray-Darling and provide a basis for a sustainable future for our communities in unison with the wider environment.

“In doing this it also creates an unheralded opportunity to develop a social-ecological view of our rivers and landscapes which supports all of the human effort that has been involved in crafting the present initiatives and provides a base for those of the future.

“We are proud to be part of the current initiative and anticipate providing greater confidence to the wider community that we as a wider group can work together and manage the Murray-Darling Basin for the future.”

-Professor Max Finlayson, Director, Institute for Land, Water and Society

Project Updates

Dusky Flathead research

Institute researchers are involved in a new project that will contribute to the sustainable management of dusky flathead in Victoria.


While dusky flathead is a very popular fish species targeted by recreational anglers we know little about their reproduction biology.

However CSU Honors student Tara Hicks is redressing that lack of knowledge with a research project funded by Department of Environment and Primary Industries -Fisheries Victoria looking at the relationships among body size, egg quality and fecundity.

Tara, who is supervised by Dr Keller Kopf and Dr Paul Humphries, is a Distance Education student living in Mallacoota in Far East Gippsland who began her Honors mid-year. “There is actually no research on the reproductive biology of dusky flathead in Eastern Victoria,” says Tara. “Some research has been done in NSW but we’re not sure if it applies in Victoria. My project is looking at the relationship between body size and fecundity (egg numbers) and body size and egg quality to see if there is a relationship.”

While there is no commercial fishing for dusky flathead in Mallacoota, the species is fished commercially at Lakes Entrance further south.

“The study is hoping to contribute to the sustainable management of the species,” says Tara. “I’m looking at whether or not there is a particular body size range which has a greater contribution to the population by having greater egg quality and numbers.”

size for sustainability

While Fisheries Victoria has set an upper size limit for dusky flathead females caught by recreational anglers in East Gippsland, it is unknown whether the size limit is an effective management strategy. “This research will help determine if current size restrictions are an appropriate management strategy,” says Tara. “Are larger females more productive than smaller fish and is the size limit a viable management strategy for the long-term sustainability of the fishery?”

To get the necessary data, Tara is collecting samples from recreational anglers who she has asked to donate samples (the fish carcasses after the fillets have been removed) via word-of-mouth, flyers and an article in the local newspaper the Mallacoota Mouth.

“We’ll probably also be doing a bit of field sampling,” says Tara. “Because there is a 55cm size limit for recreational anglers, we can’t get those bigger fish from them but we need samples across the size ranges to get a representative sample, we need some of those bigger fish.

“Despite being a recreationally and commercially important species, they just haven’t been well studied which is why the research we are doing is so important.”

Tara completed her undergraduate degree, a Bachelor of Science majoring in Zoology with the University of New England, also by distance education last year. She choose the project because it was feasible to do given where she lives, recreational anglers are concerned about the long-term sustainable management of the species, and “I’m really interested in fisheries research and the conservation and management of sustainable fisheries.”

ARC Project

The first phase of the ARC discovery project, Virtuous Practitioners: Empowering social workers is progressing well as per the plans. The data collection is nearly completed and drawing from the analysis ten biographies of social workers are being written. To discuss these biographies and social workers’ virtues a two days workshop will be held from 10 to 11 December 2014 at Wagga Wagga campus. Social work educators from eight Australian universities are expected to participate in the workshop, which is an important part of the first phase of the project.
Australia Must Build the Next Generation of Water Reform

by John Williams

Opinion

Water is not only the indispensable ingredient for life, seen by many as a right, but it is also indisputably an economic and social good. It is a commodity in its own right with no substitute and no alternative, but it is also a crucial connector between humans, our environment and all aspects of our economic system².

Australia must re-double its efforts in strategic water reform and management.

Largely as a result of the reforms introduced through the 2004 National Water Initiative (NWI) water is now used more efficiently in Australia, finances of water agencies have improved, some of the over-allocation of surface and groundwater systems has been addressed, a market has been introduced to give water users much greater choice, institutional structures are now more transparent, and water law is more comprehensive and consistent in most jurisdictions.

Most importantly, the 2004 NWI provided a nationally consistent framework within which industry and governments had certainty for investment. Collectively these achievements saw Australia emerge as an international icon for water management. The NWI was established by the Howard government following reviews of the earlier 1994 water reforms which found that they had been too limited in scope and that many of the outcomes were hard to achieve and needed renewed commitments by all governments.

While the NWI is still accepted by governments as an excellent blueprint, it is the Wentworth Group’s contention that the reform effort has lost momentum and, in many jurisdictions, even appears to be in retreat. Many of the harder reforms remain unfinished – water pricing, full implementation of water markets, identification and recovery of over-allocated systems and proper attention to groundwater – while new threats not envisaged at the time of the NWI have emerged or become more prominent. These included shale and coal seam oil and gas extraction, better understanding of climate change, rapid population growth, and renewed interest in developing northern water resources. Further the NWI principles have not been enacted in legislation in Western Australia and the Northern Territory while the Queensland government has weakened its commitment to careful development of water resources.

Now is a time of relative water abundance. Rather than being seen as the time to retreat from water reform, it should be seen as exactly the right time to put the next round of reforms in place. The 2004 reforms provided the tools by which we could manage the Millennium drought but they took some years to be put in place. Australia already has one of the most variable climates in the world; it will become even more variable as a result of climate change. It will be too late if we wait for the next drought to occur before we take action.

We need to be at the top of our game if we are to maintain prosperity in our highly (and increasingly) variable climate. Water is an economic enabler, and therefore a next generation intellectual framework for managing water is critical if we are to remain a healthy, resilient and prosperous nation. Water reform must be seen as a long term game, rather than a one-off effort that runs its course after 10 years.

While encouraging that the Government’s Agricultural Competitiveness Green Paper employs the National Water Initiative principles as a criterion for Commonwealth involvement in developing future water infrastructure projects it is quite uncertain how these principles will be agreed to, implemented and audited with the discontinuation of the COAG Standing Committee on Environment and Water and the National Water Commission.

Government organisations named to absorb responsibilities like the Productivity Commission may be capable of conducting audits, but are not suitably staffed nor designed to work with the states to complete the National Water Initiative reforms and deal with the emerging issues of climate change, emerging need for policy and mechanisms to manage water issues in growing shale and...
coal seam gas industries as well as continuing to rectify the over-allocation of water extraction from rivers, streams and associated groundwater systems.

It is not just agriculture that uses large quantities of water. Striking an equitable balance between water users is a debate about the future of growing food vs urban development vs extraction of mineral resources and fossil fuels vs environment and conservation. A failure to build upon our past water management investment will result in a failure to manage the variability of our water over time and space; a problem we have grappled with time after time since Federation.

Combined with the predicted increase in Australia’s own population over the next 40 years, along with expected impacts of climate change alone would indicate that the cumulative impacts on water resources are likely to be huge. Rather than this being the time to abandon water reform, it is exactly the right time to put the next generation of reforms in place.

What’s needed now?
Water reform must be treated as an on-going effort rather than a once-off 10 year program. It took 10 years for the first round of reforms to be renewed because they were not broad enough. There needs to be a fresh commitment to complete the unfinished reforms embedded in the 2004 National Water Initiative and to tackle the new issues facing Australian water management.

The steps are:
• All governments to commit to an updated, reinvigorated National Water Initiative Agreement with a focus on completing unfinished tasks and incorporating responses to emerging water resource issues, with a priority on:
  • Moving towards recovering the full cost of water in pricing that includes the scarcity value of water and cost of environmental externalities.
  • Reforming the urban water sector by improving investment decisions, increasing the independence of urban water utilities, streamlining water regulations, and incorporating environmental externalities in investments and pricing.
• Increased attention to groundwater management including better integration with surface water management.
• Identifying all over-allocated systems and providing adequate environmental water for their recovery.
• Extending water markets to heavily used groundwater areas approaching full allocation.
• Incorporating all mining and petroleum activities, energy generation and carbon sequestration methods in water planning.
• Explicitly including climate change effects in all water planning and investment decisions.
• Institute an independent organisation with sufficient skills and funding to drive the remaining reforms, including the authority to recommend financial sanctions for unsatisfactory performance and to publish regular, fearless reports of progress.
• Combine water (flow) reforms with water quality and associated land management objectives, so that all causes of ecological threat are dealt with in an integrated way.
• Invest in new knowledge so that water planning and management can be based on a factual understanding of the consequences of decisions. Our reputation and expertise as world leading water managers is being eroded. Our failure to invest in water reform now will result in the loss of a great opportunity to market our skills and knowledge internationally as other countries face their water issues.

Water will always be a scare resource in Australia. Managing water scarcity will continue and become an increasingly complex and demanding challenge for Australian governments. For water is such an important economic enabler. We learnt from the federation debates on water in the 19th century that national leadership is a pre-condition to getting agreements and cooperation between state and federal governments that extend beyond the political timeframe.

Now is the time for renewed thinking, policy development and action wherein governments, industry and communities rise to these challenges and ensure that our hard-won investments in reform are not squandered. We need to build on our water reform record to prepare for the future with foresight. How well we meet that challenge will shape our economic prosperity, social wellbeing and environmental health.

References:

Below. Weir on Murray River at Mildura
First speaker was Institute adjunct research fellow Barney Foran who very much set the scene (in terms of climate change) from the global to the local drawing on evidence from a wide range of sources including NASA, reports from the IPCC - Intergovernmental Panel on Climate Change, and the Bureau of Meteorology records.

“The key science message here is that this is global science working at its peak, at its most effort,” said Mr Foran. “There is a huge amount of challenge and analysis going on. The things we say are not based on one person’s opinion. They key message coming out of all that is, that at a global level, we are 95% certain that it is human activities that are causing the problems we are facing with the main culprit gas – carbon dioxide. We haven’t seen this level in the earth’s atmosphere for the last 800,000 years or so; and we’ve got problems with rising sea levels and also the Arctic and Antarctic ice shift.”

Second speaker was Ms Tracey Oakman, Director Public Health Unit, Murrumbidgee and Southern NSW Local Health Districts who spoke on the effect of climate change on health and health services, and in particular of heat.

“One impact often leads to something else, a cascading effect,” said Ms Oakman. “When there is an effect of a particular incident there is always a flow-on effect around that i.e. after storms you might have an increase in water run-off and soil erosion, there might be an increase in dust storms due to the erosion. Dust storms and bushfires can lead to poor air quality which can lead to an increase in hospital presentations for respiratory and other related illnesses. It’s complex, it’s not simple which makes it a tricky one to plan for. Obviously we anticipate a lot of these issues occurring and the health sector needs to plan for these into the future.”

Ms Oakman said the industry needs to plan for the health impacts of extreme events such as fires, floods, and drought which can lead to more injuries, heat stress, potentially mental health issues and even deaths; as well as the health impacts of gradual climate change.

“The whole thing with climate change is that there is a gambit of things that may occur,” she said. “We may see more water or vector borne diseases, an increase in food poisoning from an increase in temperatures, impacts on our infrastructure ....”

Third speaker was Dr Shelby Gull Laird, an environmental educationalist and interdisciplinary scientist from CSU, who spoke on the impact of climate change on people, communities and well being. She told the audience that she works on two assumptions, one that community members are experts of their own situations- what they want, what they need, even their own local environments; and two, that climate change is real and is happening now and that climate change adaptation is on-going.

“Climate change adaptation it is a continual process that you and I will have to deal with into the future,” said Dr Laird. “It is important for us to think, back through time, how people have adapted to changing climate for the last 100,000 years. We are adaptable. As humans we are good at that...so it is important for us to remember, despite all this doom and gloom talk, that people and humanity are likely to survive if we can get our acts together.....it’s how we end up in the end that is the question for a lot of us.”

Dr Laird said an import aspect of climate change adaption was building communities and community resilience. “After a natural disaster there is a tendency people to help each other out,” she said. “One of my contingents is that we need to develop those communities ahead of time so that people can actually work together more effectively before there is a disaster.”

The fourth and final speaker was CSU Environmental Science and Management student Lewis Tinley who spoke on how climate change related to young people and what they can do.
“I don’t want to inherit a dump, I don’t want to inherit a work which is stricken by fire, floods and unsustainable agriculture, etc,” said Lewis.

“I want a world which is sustainable, which is equal for all. Although that may seem idealistic I feel that there are things we can do within our community…scientists have been telling us about the problems in the world for a long time. There may be a feeling of disempowerment when we are dealing with these issues as they seem so large. It is however important for us to think globally about these issues but act locally because community action, when combined with other communities influences the system on a larger scale.”

Lewis is a member of the Australian Youth Climate Coalition and during his presentation encouraged young people to join an organisation concerned with caring for the planet. “Don’t do it on your own, make it fun, make it part of your life but not all your life,” he advised.

The speakers were followed by a lively Question and Answer session, moderated by Dr David Watson. The panel answering the audience’s questions included the previous speakers as well as Mark Verbaken, Manager, Environment and Community Protection, City of Wodonga, and Matthew Dudley, Team leader, Sustainability and Environment, Albury City.

The event was followed by a “Living with Australia’s climate: A community conversation on climate, weather, fire & water” also held at the Albury Entertainment Centre.

This was an Australian National University event with climatologist Professor Janette Lindesday from the Fenner School of Environment and Society, and Dr Philip Gibbons, a bushfire expert also from the Fenner School. Institute Director Professor Max Finlayson was the moderator for the event which drew a crowd of more than 70 people.
Our Place Launch

The launch of the Our Place - Riverina and Murray project and showcase of the projects’ achievements so far on Monday, August 18 at the Albury-Wodonga campus was certainly well attended.

More than 55 people were present including community members from Holbrook and Albury, a large contingent from the Albury Wodonga Community College and Albury’s Bhutanese community, Office of Environment and Heritage and Albury City Council staff, and CSU’s Albury Head of Campus Professor Julia Coyle who gave the official welcome.

South-West Regional Manager for the NSW Office of Environment and Heritage (OEH), Mr Graeme Enders launched the project which aims to assist communities to protect their local natural environment and to live more sustainably. He said the Our Place project provided a program, in partnership with Charles Sturt University, to go to local towns and communities, get people together, and discuss what is important to individuals and the community, what are the issues that are being faced, and how OEH and/or the University could be of assistance in shaping a response.

“More importantly, for us as government, if we don’t have that conversation then very often we can miss the very productivity, the innovation, the bright ideas that people have that need to be brought into solving problems which could be to do with energy, water, local vegetation or animals, or just the sustainability of communities and how people work together,” he said. “We are quite hopeful that Our Place will provide a mechanism for some of that conversation and dialogue to occur and along the way that should make our programs more relevant.” He said the best place to start for building agreement on what are the important aspects of our environment is with the communities that live in that environment and who really are the best long-term custodians of their local environment.

The three communities where Our Place discussions have been held in the Riverina are Deniliquin, Albury and Holbrook. ILWS researchers involved are Dr John Rafferty (project team leader), Dr Helen Masterman-Smith, Dr Shelby Gull Laird and Dr Jillian Dunphy.

“One of the things we have learnt along the way is that the larger structured grants that government has traditionally provided are sometimes a little bit difficult to access for smaller communities,” said Mr Enders. “Our Place provides an opportunity to provide smaller grants that are more targeted and more relevant to what people are actually doing and to get a bit of momentum going and to build some skills.”

Dr Helen Masterman-Smith then described the processes involved in the community consultations which included conversations and building relationships, forums, surveys and community workshops. The key lessons learned were:

- Lots more community knowledge, passion and activity than commonly released
  - Practical barriers limit understanding and engagement with each other
  - Difficult to address barriers without a common sense of purpose and understanding
  - For participants, sustainability is about everything and everyone.

Dr Masterman-Smith said the results of the surveys and the fact that over 100 people indicated that they wanted more dialogue and engagement with the project painted a picture “of communities champing at the bit, wanting to get on and do things.”

“And then the question is what is getting in the way?” said Dr Masterman-Smith. “The usual thing that people say is that people need to be educated. But what we’ve found through this project is that it is much more than that. Certainly there are some educational opportunities but the real barriers are beyond those sorts of considerations.” She said the big barrier was practical support. “People are time poor, and broke,” she said.

Dr Masterman-Smith said a big take home message was that “communities want to drive responses, they want control over issues, they want to have a big say and they want the resources to make things happen.”

To this end, funding has been provided through the project for seven small community-based projects:

- Simply Greater Future Fair and Holbrook Community Markets
- Deniliquin Community Gardens Project
- Deniliquin Community Recycling Project
- Albury neighbourhood e-group project
- Restorative Indigenous Garden, Koori Kindermanna Preschool/ Woomera Aboriginal Corporation, Albury
- Backyard Habitat Club project, Albury
- Climate Impacts and Adaptation Citizen Science project, Albury

The day’s activities included a tour of the Albury-Wodonga campus led by Dr Rafferty.
Albury has an important place in Australian railway history, being the major place where, until 1962, all passengers and freight had to be transhipped between New South Wales and Victorian trains due a difference in their gauges. Despite gauge standardisation, rail freight through Albury has declined, most notably over the last 20 years.

Regional rail services have declined to very low levels on routes through South-Eastern Australia. Recently, however, there have been some signs that freight is moving back onto trains. The possibility of a revival in the industry has attracted the attention of local government, which has born the costs of rail closures including road maintenance and the unpriced costs related to health, safety and pollution associated with the rapid growth of road freight. Local government is also being attracted to the development potential offered by rail’s lower operating costs and smaller environmental footprint.

Reid, who is also Mayor of Buloke Shire, spoke about the development of the Alliance with its 25 member councils since 1997. Connectivity with New South Wales is a focus of the work of the Alliance, with one if its members (Urania Shire) being in New South Wales and the others all in Victoria. The Alliance advocates for the upgrading of rail infrastructure and the growth of an active market for rail freight. Victoria has a continuing problem with several of its regional lines remaining unconverted from the broad gauge which has differed from that used in New South Wales since the 1850s.

However, the Victorian Government has recently committed $220 million to standardising and upgrading one of its longer regional lines, that between Melbourne and Mildura. Reid described the development of several intermodal terminals, where containers are transferred from trains to trucks for local distribution, and vice versa – containers are moved from their source to a terminal for loading onto trains.

Interest in the development of intermodal terminals is growing rapidly among councils in South-Eastern Australia. The Alliance fosters greater cooperation among local councils, especially those in metropolitan and regional areas which, despite their spatial separation, share an interest in growing rail’s share of freight for safety, environmental and economic reasons.

Ian Gray pointed to the relatively poor performance of rail, especially from Victoria to New South Wales where rail moves only 3 per cent of all freight. Rail is most economical over relatively long distances, as its inherent efficiencies outweigh the cost of transhipment from trucks. By way of comparison, in the USA, rail moves the majority of freight over distances greater than 500 miles. The distance between Melbourne and Sydney is greater than 500 miles, suggesting that our rail system is a long way behind. However, the equivalents of our B-double trucks are not permitted on the Federal interstate highway system and much of the USA’s rail infrastructure is capable of much bigger trains making the system more efficient. This could lead to pessimism, especially when neither government nor industry appears willing to invest in rail infrastructure to the extent necessary to bring our system up to North American standards.

From a regional perspective, North America also has an advantage in the presence of a genuine regional rail system. That is, railways which are locally developed and managed: 550 of them. We have no such system here, with the administration of regional and interstate rail infrastructure and operations being highly centralised. Ian proposed that consideration of this element could give rise to optimism for regional rail freight, as it requires some policy redirection but little essential government support otherwise. Given that rail freight has been able to hang on alongside the growing efficiency of long-distance road transport, and the apparently untapped potential of regional rail markets, the future could be seen much more positively. Ian pointed out possible misunderstandings about the capabilities of rail, including an over-emphasis on distance travelled by freight at the expense of acknowledgement of the importance of the density of traffic over regional lines. The importance of recognition of mutual interest among local areas was also emphasised.

Discussion took an optimistic tone, with positive local perspectives on rail issues being offered. The engagement of local government with the rail industry, and the perseverance of some local rail businesses, is indicating ways forward. Nevertheless, it will be important to maintain discussion focused on the critical issues, like traffic density and how to achieve it. Further work disseminating information for public discussion, based on sound, integrated research, will be essential to rational debate. The seminar, along with the larger gathering at Blayney last year held in conjunction with the Lachlan Regional Transport Committee and Blayney Shire Council, helped to bring the significant issues to the attention of people in positions to take action, and foster networks among those people. Our role in information collection and dissemination, in conjunction with regional organisations, is continuing through web-based activity as well as academic publication.
The Institute’s Food Security and the Murray-Darling Basin conference, which was to be held mid-November, has been cancelled.

“We therefore had to make the difficult decision not to proceed with the conference,” says A/Prof Higgins. “Overwhelmingly, people who were going to present a paper, or who had registered to attend, understood why we had to cancel the conference, but were nonetheless disappointed that it wasn’t able to go ahead given that the conference’s topic was an issue of such significance.

“Quite a few people asked if we planned on holding such an event in the future...so there is certainly interest in food security.”

A/Prof Higgins says the interest came from both people who were going to present at the conference and from within CSU including the Graham Centre and the Faculty of Science. “So that means there are plenty of opportunities to take this forward in the future,” he says.

While the conference was to have been a major activity for SRA, its members have also been working on developing new projects. The SRA held its first project development workshop on August 6 in Wagga which was attended by most of the people in the SRA.

“Basically we went through a process of brainstorming research ideas, identifying rural and regional food security issues that we felt needed researching,” says A/Prof Higgins. The ideas were then prioritised according to how they fitted with the SRA’s objectives, and their potential to attract funding, and to engage community and research partners both within CSU and externally.

“From that we were able to come up with two key project ideas at least,” says A/Prof Higgins.

The two are around:
- Food supply chains and biosecurity threats in Australia
- Local food economies

The projects are under development with a meeting planned in early March next year for a progress update on the projects.

As part of the project development workshop, members also defined the SRA’s goal which is: “To improve understanding of food system vulnerability in rural and regional Australia by evaluating the adequacy of existing policy and planning response to vulnerability, and conducting research that contributes to the development of more sustainable and resilient food systems.”

New project
The SRA also has a new project Social factors influencing technology adoption in the rice industry. Higgins, V. & Bryant, M. [Details]

Biodiversity Conservation SRA

The collaborative research being undertaken by a group of the Institute’s terrestrial ecologists since 2007 has been formalised and new web pages have been created under the Biodiversity Conservation Strategic Research Area on the Institute’s website.

“The new web pages highlight the activities of the Biodiversity Conservation researchers who have been active over the past few years as demonstrated by a number of major ARC projects involving Prof Gary Luck, A/Prof David Watson and myself,” says SRA leader, Dr Peter Spooner.

“A major aim of the SRA is to understand key processes which threaten biodiversity in rural areas.”

The research undertaken contributes to the University’s current ERA 4 ranking for Environmental Science and Management.

“Our research has important implications in terms of industry engagement, and future land management - particularly in terms of addressing key threats such as climate change,” says Dr Spooner. “To predict and manage future environmental problems, we first have to understand how native species are currently interacting in agricultural landscapes.

“Worldwide, human induced landscape change is one of the greatest threats to biodiversity. Although ecosystems and species possess some resilience to change, the speed and intensity of ongoing human tampering with the earth’s natural components are placing significant stress on their ability to persist and survive.

“Global climate change places an even greater urgency upon efforts to better understand and conserve biodiversity and the ecosystem functions that it sustains. Research towards conserving biodiversity in agricultural landscapes has almost always focussed on remnants of native vegetation. Indeed, such ‘islands’ in the farming seascape are often critical to conserving species.

“However we recognise that farms can also provide important resources for native fauna - from crops to associated non-farmland habitats such as dams, gardens and orchards. In turn, biodiversity can also provide important benefits or services to production e.g. pollination for crops or control of insect pests.”

Members of the SRA are Dr Peter Spooner, Prof Gary Luck, A/Prof David Watson, A/Prof Ian Lunt, Dr Melanie Massaro, DR Manu Saunders and Dr Wayne Robinson (see
Dr Peter Spooner recently spoke at the Almond Industry Conference in Adelaide to present the final results of a four-year ARC project which investigated native bird interactions with almond crops.

“There was a large audience who were definitely interested to hear more about “organic ways” of dealing with pest problems in crops,” says Dr Spooner. “Using cost-benefit analysis, our research has showed that there are ways to improve production, but minimise inputs, by harnessing free services provided by nature.” He also spoke about Dr Manu Saunders work on pollination with almond crops.

“Conference industry delegates and other attending scientists gained a new appreciation of CSU’s work in this area which could potentially lead to new collaborations with Horticulture Australia and the Victorian Department of Environment and Primary Industries (DEPI).”

Dr Spooner has been working on developing new relationships with other potential industry collaborators. He has been invited as a keynote speaker to the VicRoads Environmental Conference in Melbourne in March next year “where industry, members and scientists will be participating in workshops aimed at improving environmental management practice of road reserves in Victoria.”

“This helps position the Institute as a key player in this particular area and highlights there are new areas where we could be working with industry,” says Dr Spooner. “The SRA will be continuing to explore new collaborations with industry in 2015”.

The SRA plans to have a meeting early next year to welcome new members and look at future directions for the group.

Regional Development Conference

-by Nikki Scott, ILWS Business Manager

Having a passion for economic development and entrepreneurship, when the opportunity came to attend the Regional Development Conference in Albury, I grabbed the chance with both hands. It didn’t disappoint.

The keynote speakers were so passionate it was so inspiring. CSU was a sponsor of the conference with our VC Prof Andy Vann opening the conference with a very interesting presentation. Our Director Prof Max Finlayson was next and managed to get numerous laughs and claps from the audience.

Some of the best tweets from the conference Twitter feed that resonated with me:

• Wealth will come and go but education will stay with you and allows resilience
• Critical success factors in regional areas are leadership, common agenda and connections for purpose
• 60 community energy projects being developed across Australia, great opportunities for regional areas
• Creating age friendly communities could have significant economic flow-on for other industries
• Why was education not one of the announced Growth Centres when it is already one of our biggest sectors and in the future?
• Philanthropy is a donation of time, talent and treasure, communities are already philanthropists
• Long term partnerships, clear vision, connected leadership essential are essential for meaningful sustainable projects

The icing on the cake was also the announcement that Bathurst City Council together with CSU had been able to secure SEGRA 2015.

With regional development being one of CSU’s key aspirational research themes, it sounds that a trip to Bathurst to participate in this exciting event will finally materialise!
Adjunct News

Impact of the G20

If you haven’t seen them already, check out the Balancing the G20’s Impact series of short reports compiled by the Institute’s adjunct Barney Foran and colleagues from the University of Sydney and KGM & Associates.

The Institute also has hard copies of the report, available on-loan. Contact Kris Gibbs on kgibbs@csu.edu.au if you would like to borrow a set of the reports.

The reports are impressive. Barney Foran (pictured right) spoke to Connections about the reports, the processes involved, the key messages and what he hopes to achieve.

Why did you do it?

Three reasons. The first is from a science perspective. We now have the capability ability to see into every country in the globe at a huge amount of detail. My part in that is: “What does it all mean?”

The second was that the G20 meeting was coming up in Brisbane. The G20 meeting was a good anvil to beat this huge numerical base into some sort of shape that had a pointy, policy end.

The third is that this is a set of bricks if you like on which I can build a research portfolio that is both global but also national and has local ramifications. Once you know what issues are happening globally, in several nations, then when it comes down to what do we think about an issue in CSUs ideas’ catchment, then you can say Argentina or whatever has this problem too, and this is the way they are approaching it.

How did it come about?

The numerical base for the reports is EORA, (named after the Aboriginal people where Sydney is built today), a global data base that was basically a University of Sydney’s School of Physics initiative begun 10 to 15 years ago. I’ve been working with those colleagues for 15 years or so doing the pre-cursors to this work. I started to focus in on the Brisbane G20 Summit two years ago. All of last year was about data; all of this year was about researching, writing and design.

Why was the design so important?

The whole design thing for me is an experiment in how to get across extremely complex information in a simple way. I’ve consulted a lot with the policy types. You have no time to get your message across and they seldom read stuff anyway.

So I wanted to make something where the information was all there; could be read in low light with a glass of scotch in one hand; had a mixture of words, for people who read, figures for people who look at figures, and graphics for people who understand graphics. And no matter where you went into the document, it had something to say. Every bit was self-contained. It had to have an attractive cover and it had to have all its scientific credibility on each set as well. Because it was the G20, I didn’t want to produce one long report but rather a short report for each country because I anticipated (I may be wrong here) that countries are going to be interested in themselves first, and then in other countries later.

Right from the start, I worked on the design in landscape so that it fills an entire computer screen and also transmogrifies, I realise now, to ipads, tablets and iphones, across platforms. I worked with a good local designer Renee Paola to achieve the look I wanted. It’s great to have the support in the region of a really talented and sophisticated designer. She knew immediately what I was on about.

Who is your target audience?

It is targeted to the top end of town. Physical copies over a three week period were sent to the Australian ambassadors of each of the G20 countries, to the key ministers and shadows in the Federal Government, to a whole lot of leading people in the groups surrounding the G20 such as the B20 for business, the Y20 for youth, the L20 for labour, the C20 for civil society (which includes environment) and a T20 for think tank. As well it was sent to 10 media groups and about 20 what I would call thought leaders in the Australian influence groups.

Has the experiment worked?

The experiment is to see whether we can get complex information across to people so the question is still out. But initially there is some very good high-level comment (very accessible, a veritable gold mine) but no ordered comment back from the people I’ve targeted so I could have failed there? But I have achieved my own personal goals of getting the building blocks for a big push on global impacts of production and consumption so if I approach someone to find out whether or not they are interested in working with me, I’ve got a first product to show.

What are the key messages in the reports?

In a G20 context, my key message is that we need another development model. All the more developed countries have great GDP, low inequality and huge environmental impacts all around the world through their global value chains. We can’t get the whole globe to develop like this. It seems to be physically impossible to have development which gives the right money and low inequality but is minimally impacting.

Life today is a very physical process and there are no G20 countries that are rich, equal and have low physical impacts. And that’s not just carbon emissions.
It’s across the five horsemen of the Apocalypse if you like – emissions, scarce water, biodiversity, land, and material flows.

Hopefully if I’m diligent enough and bright enough, we could start to come up with some suggestions for other development models. Perhaps there are some individual seeds or ideas within many of these countries that I have studied in fine detail that may coalesce into something that looks like a model of development that isn’t just the conventional wisdom of more, more and more. But I’d have to say that brains greater than mine have failed at this task.

**Artist’s work**

Institute adjunct Dr Mary Rosen-gren is the co-editor (together with Chris Kennedy) of a new book (2014) SPECTRA: Images and Data in Art/Science. The currency of Images in the studio and the laboratory, published by the Australian Network for Art and Technology. A limited number of hard copies were printed but a pdf download is available on the Australain Network for Art and Technology (ANAT) web site.

She also had work exhibited in a group exhibition at University of Wollongong April 11 to May 8 called “Collected Connected & Cut Artists’ Books Exhibition.”

**Losing wetlands.. how much has gone?**

It has been frequently stated, but without provision of supporting evidence, that the world has lost 50% of its wetlands (or 50% since 1900 AD). A recently published review of 189 reports of change in wetland area by ILWS adjunct Prof Nick Davidson, has found that the reported long-term loss of natural wetlands averages between 54–57% but loss may have been as high as 87% since 1700 AD.

While in Australia, Prof Davidson was interviewed by ABC radio with broadcasts heard on ABC News, ABC Country Hour SA, October 6 Report.

**Basin Plan research**

Institute adjunct Peter Waterman visited Albury the week October 13 to 17 to work with the Institute Director Prof Max Finlayson on the development of a Murray Darling Basin Plan research theme. He also attended the Murray Darling Association’s annual general meeting held in Tumut, October 15.

**Healthy Country Plan - Biodiversity of Umpila Country**

by A/Prof Justin Watson

Umpila Country is located in northeastern Cape York Peninsula and incorporates the Aboriginal Freehold land east of the McIlwraith Range.

As part of a management strategy and vision for the land, a team of researchers (botanists and zoologists), traditional owners and rangers completed a biodiversity survey in August and September 2014. The surveys primarily comprised a systematic fauna survey and provided hands-on training to participing rangers in animal survey, capture and handling techniques.

Habitats within or near the survey site included eucalypt woodlands (with grassy under storey), paper-bark woodlands and large river systems with gallery forest. Desktop analysis in combination with field surveys identified 700 flora species and more than 150 species known to be of cultural value. A high diversity of fauna was recorded during the survey, including many native fauna considered endemic to the Cape York area, some with a shared distribution with Papua New Guinea. The area is fairly unique from a biodiversity perspective, the high abundance and diversity of both flora and fauna indicate the land has had appropriate fire management, limited vehicle access, little evidence of dogs, and cats, few weeds and no (or minimal) cattle grazing.

The survey provided valuable biodiversity information aimed at improving understanding about the cultural and ecological significance, condition and management requirements of terrestrial ecosystems of the land.

**Research in PNG**

Former PhD student Harry Saku-las, now Director of Environmental Research and Management Centre at UNITECH, Lae PNG, Dr Johannes Bauer and Institute adjunct Dr Jim Birckhead had a paper published in the journal Environment PNG last year dealing with community participation in biodiversity conservation and development projects.

Following from this journal article, Harry and Jim are now associates of the ImpaxSIA research and consulting group in Brisbane. They are developing research projects in PNG with respect to social impact assessment of mining and forestry through Harry’s centre at the University of Technology with inputs from the Brisbane based researchers.

**New role**

Dr Lee Baumgartner has been an adjunct with ILWS for several years and recently joined the Murray Darling Freshwater Research Centre after spending the last 15 years at Narrandera Fisheries Centre. Lee has taken on a role where he is largely responsible for developing science capacity within the group and building meaningful collaborations with others. Lee has been lucky enough to also transfer an active IWLS project ‘Developing fishways in the Lower Mekong Basin’ and will continue to work with Dr Jo Millar. He will also work with Dr Skye Wansom and A/Prof Robyn Watts to help progress several publications on environmental watering projects in the Edward-Wakool and Murrumbidgee Rivers. Lee has settled into Thurgoona with his wife Bec and two girls and we hope to see more of him on campus.
Community Engagement

Social well-being

On Sunday, August 30, Prof Finlayson gave a talk on water management in the Murray-Darling Basin at the Uniting Church in Albury to the Uniting Church Murray Darling Basin (UCA MDB) group who were doing a tour of the Basin. The group consists of a diversity of people from across the Uniting Church, including scientists, farmers, environmentalists, theologians, pastors, educators and others from various parts of the NSW/ACT Synod. “They were interested in social well-being and the Murray Darling Basin Plan from a pastoral care aspect; the role the church could play for people who may be under stress because the changes caused by the Plan,” says Prof Finlayson.

Wildlife survey

Drs Wayne Robinson and Catherine Allan were involved in a Community Wildlife Survey organised by the Woolshed Thurgoona Landcare Group on Friday evening, November 7 at the Hume Weir, both next to and below the dam wall. More than 30 people took part in the activity.

“We caught some forest bats, observed gliders using nest boxes and foraging at night, saw multitudes of brush tailed possums, and heard owls calling,” says Wayne who supplied and helped to set up the wildlife survey equipment.

“People were very interested. Those who stayed on into the night got to see the gliders and those who came out early the next morning helped with the bats we had trapped.”

Sustainability in the Pub

Dr John Rafferty along with Matthew Charles-Jones and the Office of Environment and Heritage trivia team took part in a Sustainability in the Pub event at Paddy’s Crown Lounge in Albury, Oct 29. As a member of AI Gore’s Climate Reality Australia team John gave a presentation on “Climate Reality.”

In the News

Institute members have certainly had their share of CSU media releases, and associated media hits, with 12 CSU media releases over the past three months including:

CSU welcomes $6.9m water monitoring projects
- the VCs response to the announcement that ILWS researchers are leading two major environmental water monitoring projects in the Edward-Wakool and Murrumbidgee river systems.

New research: G20’s global impact
- a release on the new report by Barney Foran on the Impact of the G20s

Opportunity in Australia-China Free Trade Agreement
- with comments by Prof John Hinks saying that service providers could be the real winners from a Free trade Agreement with China

Save RET to stop Budget blowout
- Prof Kevin Parton urges the federal government to retain Australia’s current Renewable Energy Target (RET)

Research preparations help save harmless sharks
- a story (with a video clip) about PhD student Joanne Edney’s efforts to save harmless sharks from a “ghost net” off the NSW south coast

Sustainable Living week for Albury-Wodonga
- a week long event sponsored by the RCE-MD involving Dr John Rafferty

Realities and challenges for the Basin Plan
- Prof Max Finlayson talks about how getting communities involved is crucial to the success of the Murray Darling Basin Plan

Getting on the rails
- story about the ILWS symposium exploring the revival of rail freight in Australia with A/Prof Ian Gray

CSU academic supports WATCH
- Dr Shelby Gull Laird has joined the local climate advocacy group

CSU in Murray Darling Basin forum
- story about Prof Max Finlayson’s lecture as part of the Uniting Church’s Murray-Darling Forum “Towards a new and risky path for the common good.”

Climate change and the Border community
- a release to promote the Climate Change and the Community forum held in August

Details of media hits are at the Institute’s In the News page

Visitors

Chinese Professor

Visitor in August was Professor Guoqing Shi, an eminent social researcher from Hohai University, Nanjing, China. Professor Shi, a consultant to the World Bank/Asian Development Bank, is also the Director of the Social Development Institute and the Director of the National Research Centre for Resettlement.

Professor Shi’s two day visit to CSU’s campus at Albury-Wodonga was part of a month long visit to Australia funded by the Chinese Scholarship Council.

Professor Shi’s recent visit was his third to CSU. Prof Shi was one of the key people to initiate a relationship between Hohai University and Charles Sturt University which resulted in a MOU being signed between the two universities. When he and colleagues visited in 2009 they went on field visits to the Hume and Dartmouth Dams with A/Prof Robyn Watts.
His most recent visit to CSU has seen the MOU between Hohai University and CSU renewed.

“The goal of the MOU is to enhance academic exchange including student exchanges,” said Prof Shi who currently co-supervises ILWS PhD student Ms Yinru (Ruby) Lei who is based at the Albury-Wodonga campus. Ruby’s other supervisors are Prof Max Finlayson and Dr Rik Thwaites. Ruby’s PhD is on “Human migration decision making processes in response to climate change.”

There have also been several Masters of Business students from Hohai University who attended CSU. “We already have some academic research co-operation in the areas of fisheries, impacts of dams, ecosystems etc. between our two universities but we would like to develop this further,” said Prof Shi. “This is one of the objectives of my visit.”

To that end he had a meeting with a number of Institute researchers and Institute Business Manager Ms Nikki Scott while here and discussed possible topics for research projects proposals that could be funded by Australian and/or Chinese funding bodies.

While here Professor Shi also gave a seminar on “Social, economic and environmental impacts of large scale water projects: Three Gorges Dam and South to North Water Transfer Project” at the Albury campus on Wednesday, August 13.

“The Three Gorges Dam is the largest hydro-power station in the world, and the South to North Water Transfer Project is the largest water diversion project in the world,” said Prof Shi.

A third reason for his visit was to look at the possibility of developing training programs for Chinese practitioners that would focus on the experiences and lessons learnt from the management of a watershed such as the Murray-Darling Basin which also has major hydro-power schemes. Hohai University, which has 42,000 students, has, as its main focus, research and study of hydraulic engineering and water resources.

**Indonesian journalists**

A group of Indonesian journalists visiting Australia as part of the Asia Pacific Journalism Centre 5-week fellowship came to ILWS on the morning of Thursday August 30 to learn more about business and environmental issues particularly on the theme of “Why water matters” with a discussion on food security and water management issues with Institute Director Professor Max Finlayson and Associate Director A/Prof Vaughan Higgins.

Their visit started with a Welcome to Country, followed by a talk on the Indigenous perspectives of environmental management by ILWS researcher and Wiradjuri elder Yalmambirra.

APJC is a Melbourne-based not for profit that provides professional development support to journalists from developing countries.

**International colleagues**

Dr Catherine Allan has had two international colleagues make brief visits to the Institute recently. One was Elisabeth Ehling, from the Institute of Environmental Systems Research (USF), University of Osnabruck, Germany. While here Elisabeth gave a seminar titled “How to overcome the trade-offs between human and environmental water needs,” on October 22 at the Albury-Wodonga campus.

The talk was based on the Water Needs research project ‘How to overcome the trade-offs between human and environmental water needs in times of global change: The role of ecosystem services and hazards’. This large project, led by Professor Claudia Pahl-Wostl, is comparing case studies in Europe, South Africa, China and Australia to identify relevant institutional settings important for sustainable and adaptive water resources management in order to fulfil the requirements for human and environmental water needs.

Dr Allan’s second visitor was Dr Kevin Collins, (left) from The Open University, in Milton Keynes, in the U.K. Dr Collins is a colleague of the Institute’s Dr Catherine Allan.

The two (with another colleague Prof Ray Ison from The Open University/ Monash in Melbourne) have recently had a paper accepted for publication. Ison, R.L., Allan, C. & Collins, K. (in press). Developing a metaphor-based praxis for governing social-ecological systems. Environment and Planning C.

Dr Collins’ research areas are geography, environmental science and systems, with a social science emphasis. The visit was an opportunity for he and Dr Allan and others from the Institute to discuss future papers and collaborative project bids, to network and “to see a bit of the country.”

**Indian visitor**

Visitor to the Albury-Wodonga campus on November 19 was Mr Rajiv Bhartari from India who gave a seminar presentation titled “Four Pronged Strategy to Save the Big Cat - My Experience in Corbett Tiger Reserve”. Mr Bhartari, a guest of Dr Rik Thwaites, is the Chief Conservator of Forests Ecotourism in Uttarakhand. He has spent nearly a decade in Corbett Tiger Reserve as Director and Deputy Director.

Mr Rajiv Bhartari (Left) and Dr Rik Thwaites. Pic J. Millar
Member’s News

Education expert moves places

An expert in environmental education who is no stranger to ILWS has joined the School of Environmental Sciences.

Dr John Rafferty, (above, pic by P.McCormack) formerly with CSU’s School of Education based in Albury-Wodonga, brings years of experience and a number of research and education projects to the School.

Dr Rafferty is currently convenor of the Regional Centre of Excellence for Sustainable Living – Murray Darling (RCE-MD), which is linked to the global United Nations University, and is now completing the ‘Our Place’ project (funded by the NSW Office of Environment and Heritage) which provided a series of small community-based activities in Albury, Holbrook and Deniliquin.

This project included the recent joint sponsorship by the RCE of Albury-Wodonga’s Sustainable Living Week. It included extensive involvement of the host of ABC TV’s Gardening Australia program, Costa Georgiadis, who is also patron of RCE.

Dr Rafferty is also the Engagement Manager for the HEPP-funded ‘Learning Communities’ project, which includes Drs Helen Masterton-Smith and Marie Sheahan and Mr Wes Ward. The ILWS Business Manager, Nikki Scott, is the project manager for ‘Learning Communities’.

The ‘Our Place’ project is due to be extended to Narrandera in 2015. We also look forward to hearing John on ABC Goulburn Murray with a regular segment on science and sustainability from January next year.

New to Learning Communities

Wes Ward has joined ILWS as the new Outreach Coordinator (Learning Communities), working with Drs John Rafferty, Helen Masterton-Smith and Marie Sheahan and Nikki Scott on their HEPP funded Learning Communities project.

“I am to help run a project showing Year 10/11 and Year 5/6 students from low socio-economic schools what careers are available through university studies to help make their communities more sustainable - environmentally, economically and socially,” Wes said.

“It is based on the ground breaking video, the Story of Stuff, and aims to enthuse school students into looking more critically at how they live and how government policies are made regarding sustainable living. https://www.youtube.com/watch?v=9GorgroigqM

“We are looking to support this critical learning through a series of excursions to CSU and Melbourne, which will also show school students what careers gained via university study can support sustainable communities.”

Wes has been seconded from CSU Media for the term of the project until the end of 2015.

He also continues his PhD studies through the School of Environmental Sciences, on how international research teams working in developing countries can better use technologically mediated communication such as email and Skype in their daily work.

He is now looking at the final stages of the research component, and due to finish early in 2016.

Dr Ana Horta

Dr Ana Horta, a new ILWS member, is a lecturer in Spatial Sciences with the School of Environmental Sciences and is based at the Albury-Wodonga campus.

Ana, who started with the University in September, is from Portugal. She has a Degree in Environmental Engineering from the University of Lisbon after which she worked as an environmental consultant for five years.

She then returned to the University of Lisbon to do her PhD in Environmental Engineering with a focus on geostatistics for environmental applications. Her PhD, which she did over five years, including working with local and government agencies where she able to apply her research.

In 2011 she received a post-doctoral scholarship which gave her the opportunity to do one year’s research in an international institution. Dr Horta chose the University of Sydney’s Faculty of Agriculture and Environment to improve her knowledge in geostatistics.

“I try to apply the discipline of geostatistics to natural resources, in my case soils,” says Ana.

After one year Ana and her family (her husband is a software engineer and her daughter, Mariana, is nine years old) decided to stay on in Australia. She was successful in getting another post-doc scholarship, the Richard Claude Mankin Scholarship with Sydney University, for a three year project to develop a soil moisture monitoring program to be trialled in the Muttama Catchment near Cootamundra in central NSW.
One year later she was again successful in obtaining a lecturing position with CSU. “It’s a wonderful way to combine teaching and research,” says Ana who is continuing her research on geostatistics and soils, and has begun collaborating with other CSU researchers.

“In terms of long term research I still think soils are a very attractive research subject in the sense that soils are a priority in Australia especially with next year being the International Year of Soils. I think there is room for creative ideas to appear.”

Another research interest relates to spatial health data. “I think, more and more, there is a need to map public health data and associate that with the environmental, and maybe even with socio-economic data to help you understand where the priority areas are and what the needs may be,” says Ama.

“I think geostatistics and GIS are the perfect modelling tools to work with this kind of data.”

Dr Wayne Robinson has taken up a two year appointment as a wildlife ecology lecturer with the School of Environmental Sciences to replace Prof Gary Luck who is working on a three year ARC project, Predicting the delivery of ecosystems services in agricultural landscapes.

“I’m really enjoying it,” says Wayne who started in July this year. “My first degree was in wildlife management.” On the research front, Wayne, a member of the Biodiversity Conservation SRA, still has plenty of projects on the go.

He:
- Is retaining his links with Fisheries NSW and is continuing collaborative research on carp and the herpes virus, fish passage projects and determining fish tolerances to the effects small scale hydro electric stations.
- Has just designed a new fish sampling program for Melbourne Water
- Is still completing the refinement of The Living Murray (TLM) condition monitoring program
- Has been working with fellow Institute member Dr Joanne Millar to redesign the villager questionnaire and data base for the 2015 surveys in Pak Peung, Laos, as part of the ACIAR funded project Socio-economic study of fish harvesting by villagers around Pak Peung reservoir in Laos. (2012-2015)
- This project is part of the larger Development of fish passage technology to increase fisheries production on floodplains in the lower Mekong and Murray-Darling River Basins project.
- Has been working with Dr Millar on the redesign of the 2015 aquaculture farmers survey as part of another ACIAR funded project Socio economic study of farmer adoption of tilapia fish production in Aceh, Indonesia (2012-2015) which is part of the Diversification of smallholder coastal aquaculture in Indonesia project.
- Is compiling the final report on modelling biological responses to environmental flow management as part of the Murray-Darling Basin Futures Collaborative Research Network (CRN) led by the University of Canberra.

Wayne is also supervising a number of PhD students including Jamin Forbes whose PhD is on Murray cod and golden perch fishery; Zsofia Palfi who is looking at the role of novel human disturbances on ant-plant interactions in roadside environments; and Michelle Montgomery, a student in Hawaii (through the University of Canberra) who is studying the control of electric fire ants in Hawaii.

In January next year, Wayne will be taking a group of 12 CSU Global students to Cambodia on a 24 day field trip. He has also been invited to present a paper on the assessment of cumulative effects in biomonitoring at the Society for Freshwater Science in Milwaukee, Wisconsin, in the U.S. in May.

He is also a co-author of a paper In Press for the journal Environmental Monitoring and Assessment titled “Stream biomonitoring using macroinvertebrates around the globe: a comparison of large-scale programs.”

New research assistant

Welcome to new ILWS research assistant Bradley Clarke-Wood who joined the Institute in September this year.

Bradley, 23, is from Sydney where he did his Bachelor of Science, Honours, with the University of NSW. His Honours project was on coastal lagoons and how their degradation affects insectivorous bats.

Bradley is working with Drs Ben Wolfenden and Skye Wassens on the Long Term Intervention Monitoring (LTIM) project for the Murumbidgee River System Selected Area. He will be assisting on most of the aspects of the LTIM including monitoring key indicators including water quality, microinvertebrate, fish, tadpoles and frogs. As well as assisting Dr Wolfenden with monitoring the biogeochemical and ecological outcomes of return flows, a component of the LTIM project.

In November he gave a presentation to the Environmental Water Allocation Reference Group (EWARG ) on bats. “I’ve been thinking of ways to incorporate bats into environmental flows monitoring and into the biodiversity surveys as bats make up 60% of the mammal diversity so they are a big part of, and depend on these systems of wetlands and rivers,” says Bradley.
Publications

Institute Director Professor Max Finlayson is one of the lead authors of a chapter on "Sustainable Development and Ecosystem Services" in a new publication focussing on water management world-wide.

According to the flagship publication On Target for People and Planet just released by the International Water Management Institute (IWMI) smart and inclusive water management will be essential to the success of the United Nations' forthcoming Sustainable Development Goals (SDGs).

The publication takes a closer look at how IWMI and CGIAR Research Program for Water, Land and Ecosystems' research can help countries monitor and evaluate their progress towards achieving the SDGs – a set of 15-year poverty reduction targets that will replace the Millennium Development Goals in 2015.

It outlines the key challenges, including the need to set realistic targets, careful consideration of local contexts, and the promotion of sustainable water resources development in a way that values healthy ecosystems.

Peer reviewed papers


Books


This book provides an authoritative, state-of-the-art review of tour guiding scholarship and research and aims to foster best practice and to stimulate further study and research on tour guiding across a range of disciplines. It explores how tour guiding theory and practice has evolved over time and what factors have contributed to this. The studies reviewed in this book cover a wide range of contexts in which guided tours are conducted, ranging from city streets to heritage and wildlife tourism attractions, from high-end tourist lodging establishments to national park campgrounds, and from highly developed destinations to very remote ones in both developed and developing countries. http://www.channelviewpublications.com/display.asp?isbn=9781845414672


Book Chapters


Conference Papers and Proceedings


Reports


Other


Awards & Achievements

EIANZ 2014 Merit Award

Prof Allan Curtis was recently presented with the 2014, Eric Anderson award from the Environment Institute of Australia and New Zealand for the “best paper published in the Australasian Journal of Environmental Management (AJEM) in 2014”. The award was part of the gala dinner at the EIANZ (Environment Institute of Australia and New Zealand) annual conference in Hobart, Oct 30-31, at the Tasmanian Museum and Art Gallery.

Prof Curtis was the lead author of the paper “The great experiment with devolved NRM governance: lessons from community engagement in Australia and New Zealand since the 1980’s”. Other authors included Prof Helen Ross (UQ), A/Prof Graham Marshall (UNE), Dr Claudia Baldwin (Uni Sunshine Coast), A/Prof Jim Cavaye (UQ), A/Prof Claire Freeman (Uni Otago), Dr Anna Carr (ABARES) and Prof Geoff Syme (Murdoch).

The paper was commissioned as part of the AJEM’s 20th anniversary and is about 13,000 words. “It was a huge challenge to synthesise the policy initiative, the underpinning theory and make judgements about the outcomes and future directions of community-based NRM in Australia and New Zealand,” says Prof Curtis.

The writing process for the paper began with a workshop at Bondi Beach in 2012. Prof Curtis said the $1000 prize money will be used to fund a similar workshop at Bondi in 2015.

Post-graduates

News

Ms Jodie Park, RHD (Research Higher Degree) student, has completed the Doctor of Social Work program under the supervision of Professor Manohar Pawar. Her dissertation was on: “Practice Discussion Groups for Child Protection Workers: Implications for reflective practice”.

PhD student Arriya Mungsunti who is supervised by Prof Kevin Parton, represented CSU at the World Bank in Washington, when she presented a paper based on her thesis research at the International Water Resource Economics Conference, Sept. 7-9. The paper was on “Estimating the Economic and Environmental Benefit of a Traditional Communal Water Irrigation System: The Case of Muang Fai in Northern Thailand”.

Director’s Activities

As part of his involvement with the Ramsar Convention on Wetlands, Institute Director Professor Max Finlayson attended a STRP (Scientific and Technical Review Panel) meeting in Gland, Switzerland in September.

Prof Finalyson, who is an invited expert on climate change, reported on Ramsar’s climate change activities.

He was also one of the keynote speakers at the Australian Regional Development Conference, sponsored by CSU and held in Albury, Oct 15 to 17.

More details on the Director’s engagement activities are on the website.