RESEARCH, ENGAGEMENT AND ACHIEVEMENTS
2017 | 2018
OUR MISSION

“TO UNDERTAKE INTERNATIONALLY RECOGNISED INTEGRATED ENVIRONMENTAL, SOCIAL AND ECONOMIC RESEARCH FOR RURAL AND REGIONAL AREAS.”

OUR OBJECTIVES

· TO MAINTAIN AND ENHANCE OUR PROFILE AS AN INTERNATIONALLY RECOGNISED PROVIDER OF INTEGRATED QUALITY RESEARCH THAT ENHANCES ENVIRONMENTAL, SOCIAL AND ECONOMIC CONDITIONS IN RURAL AND REGIONAL AREAS, IN AUSTRALIA AND OVERSEAS

· TO SUSTAIN OUR POSITION AS A RECOGNISED AND LEADING RESEARCH CENTRE IN AREAS RELEVANT TO OUR COMMUNITIES WITH AN ANNUAL RESEARCH INCOME OF $4M BY 2020

· TO REMAIN A PREFERRED PROVIDER FOR RESEARCH THAT INTEGRATES ENVIRONMENTAL, SOCIAL AND ECONOMIC DISCIPLINES WITH PURE AND APPLIED RESEARCH THAT INFLUENCES AND INFORMS OUR COMMUNITY OF INTEREST, THE PROFESSIONS, GOVERNMENT AND OTHERS

· TO CONTINUE TO BE RECOGNISED FOR OUR UNIQUE ABILITY TO BRING ENVIRONMENTAL, SOCIAL AND ECONOMIC DISCIPLINES TOGETHER TO ADDRESS ISSUES RELATING TO COMMUNITIES AND LANDSCAPES

TABLE OF CONTENTS

Director’s Report ................................................................. 1
Context .................................................................................. 1
In Review .............................................................................. 3
Research Themes
· Biodiversity Conservation .................................................. 7
· Environmental Water .......................................................... 12
· Rural and Regional Communities ....................................... 16
· Sustainable Development (International) ......................... 21
Engagement
· Regional ............................................................................ 25
· National ............................................................................. 30
· International ................................................................. 34
· Internal ............................................................................ 34
· Media ............................................................................... 42
ILWS PhD scholarship recipients ....................................... 43
Publications .......................................................................... 45
Snapshots ............................................................................... 50
Appendix ............................................................................... 51
Given that ILWS has been in existence for more than a decade I’ve taken the opportunity to quickly examine our objectives against our activity.

There is no doubt that we have increased our research activity over the past decade. That increase has not been equal and there are some standout areas in terms of projects and impact, in particular, the combined portfolio of water research exemplifies the successes. Other areas have also maintained their activity and some have not been as successful. We have been challenged to further support our “society” research, but not in isolation of the “land” and “water” research. Equally it can be argued that our “land” and “water” research should not be done in isolation of our “society” research.

That brings me back to the objectives that we have set, and which have largely remained much the same since ILWS formed. In this respect we have agreed to maintain and enhance our profile as an international provider of integrated quality research that enhances environmental, social and economic conditions in rural and regional areas. We certainly provide research that could enhance the environmental, social or economic conditions, although not equally, but how well do we integrate that research? Some of our researchers are integrating across complex issues, but others seem to still largely operate within their disciplinary bounds, or undertake their disciplinary research with little regard to the other disciplines. That research can be of a high quality and be widely recognised, and that in itself should be applauded; however, where is the evidence of the integration?

We have also set and had agreed in our last internal accreditation process financial income targets, and these are being met, but very unevenly across the disciplines. There are ample excuses for that. I acknowledge that others may say reasons rather than excuses, but given that these have been proffered for much of our existence I prefer instead that we need to move past the semantics and deliver or drop the areas that can meet the objectives. There may be a case for maintaining them within the university – my comment applies only to ILWS and our agreed objectives.

We have also agreed to undertake research and to influence and inform our community of interest, government, professions and others. Again we have some very good examples of our research being used to inform our communities about the issues that they see as important. And it is uneven across individuals. Given the manner in which a university tends to operate that is unsurprising to myself, it is whether this is what we want to see from ILWS. Keeping in mind that we have agreed as an institution and as individuals to inform our communities etc, and that extends beyond informing the research communities that we know very well.

As you read the information we have provided in this report I’d like you to keep these comments in mind as there is a commitment from our university to undertake integrated and multi-disciplinary research, to inform our communities while maintaining or improving the quality of what we do. We are achieving a lot, and we have many ardent and dedicated researchers doing their best to meet the demands of research in an academic institution. I’d like to congratulate them and hope this report highlights both the research and the researchers, and at the same time seek further commitment to our agreed objectives. The latter would benefit from greater discussion about how we have been doing this and how we can sustain these efforts in the future, and how we evolve as the very world around us evolves. With that in mind please join me in congratulating all those that have contributed to ILWS’s success, and to those that have recorded and compiled the information for this report. I am very comfortable with asking questions as we offer our congratulations.

The Institute for Land, Water and Society (ILWS) is one of Charles Sturt University’s four Research Centres. These centres are designed to bring staff together around coherent research themes, in line with CSU’s Mission and Research Narrative. CSU is Australia’s leading regional university with major campuses in the regional centres of Albury-Wodonga, Bathurst, Orange, Port Macquarie and Wagga Wagga in New South Wales (NSW). It also has specialist campuses in the ACT in Canberra and in NSW in Goulburn, Manly and Parramatta, and study centres in Sydney (NSW), Melbourne and Wangaratta (Victoria) and Brisbane (Queensland).

Australia’s biodiversity, ecosystem services, water and food security, and ultimately the sustainability of Australia’s rural, regional and remote communities are under threat. The Murray-Darling Basin, the ‘food bowl of Australia’ and geographic home for most of Charles Sturt University (CSU)’s campuses, is an example of the urgent need for systemic research and governance. It faces pressing issues around water use and management if it is to maintain biodiversity, agricultural productivity and rural social sustainability in the context of climate change and globalisation. All of these issues are linked.

As the systemic nature of issues becomes more apparent, the search for better ways to connect scientific and other knowledge, including that from local and Indigenous communities, with governance and policy becomes more pressing. ILWS researchers are addressing this need.

Formed in 2005, ILWS combines research strengths in biophysical, social and economic research and has well-established partnerships with state and federal government departments, agencies and other tertiary institutions in Australia and overseas.

Since inception, ILWS has sought to facilitate trans and multi-disciplinary approaches, underpinned by integration of social, environmental and economic research aims and practices, to address local, regional, national and global issues systemically.

It has substantial research and networking capacity to influence the governance and management of regional scale issues. As such it is an important contributor to policy-making and management decisions that contribute to ensuring a sustainable future.

Its focus on facilitating systemic research has positioned ILWS to address the issues that arise when managing social ecological systems that are characterised by uncertainty and complexity.

During 2015 and 2016 the Institute was reviewed as part of CSU’s Centre Reaccreditation process. It was subsequently reaccredited for another five years from 2017.

Leadership

Since 2007, the Director of ILWS has been internationally-recognised wetland ecologist Max Finlayson, Professor for Ecology and Biodiversity, and Ramsar Chair for Wise Use of Wetlands. The Associate Director in 2016 was environmental sociologist Associate Professor Catherine Allan. Spatial scientist Associate Professor Andrew Hall has been Associate Director since 2017.

Director’s Report: Professor Max Finlayson
Our Members

Our members work in and across a range of fields. They are involved in individual, collaborative and commissioned research around Australia and globally which provides opportunities to influence regional, national, international and academic communities.

In line with a broadening of our research base in 2017, our members now include accountants, creative designers, criminologists, consumer behaviourists, communication researchers, computer scientists, ecological (aquatic and terrestrial) scientists, economists, engineers, environmental sociologists, environmental chemists, ethicists, heritage futurists, HRM researchers, human health researchers, information scientists, lawyers, marketers, modellers, nursing researchers, political scientists, producers, social scientists, social accountants, spatial scientists, sociologists and tourism researchers.

The Institute’s ‘critical mass’ comprises of around 90 researchers. While a number of researchers are employed by ILWS, the majority are staff members from CSU’s three faculties - Faculty of Arts and Education, Faculty of Business, Justice and Behavioural Sciences and Faculty of Science - including 14 of CSU’s schools and centres.

The Institute also has around 35 higher degree research (HDR) student members whose research topics are congruent with our mission.

Our adjunct researchers, often based at other universities, institutions, and government agencies or are privately-employed, have specific areas of expertise and research interest that add to our diverse research capacity and productivity.

The Institute also employs project-based staff such as research assistants and technical staff. The ILWS Business Team includes a business manager, communications and administrative staff.

Our research

Following reaccreditation, the Institute’s former Strategic Research Areas were revised with research now arranged around four thematic areas:

- **Sustainable Development (International)**

These themes are broad, stable platforms upon which a number of projects may be operating at any time. Members may undertake projects in one or a number of themes, and may move between themes as they start and finish projects.

This re-organization of research has enabled ILWS to continue to build on and expand its research strengths. It also provides a base for integration of information from across the many disciplines and fields of study represented within ILWS.

These include ageing, aquatic science and management, the arts, biodiversity, consumer behaviour, communication, computer science, criminology, cultural heritage, ecology, economics, eco-agriculture, environmental economics, environmental management, environmental chemistry, engineering, emergency management, ethics, law and criminal justice, information studies, marketing, political science, regional development and entrepreneurship, rural health, social accountancy, social science, sociology, spatial science, tourism, and welfare economics.

**Strategic Principles***

Research direction - four clearly defined research themes involving researchers across all CSU Faculties

Research approach - pure and applied research that is, where possible, multi and trans-disciplinary

Research collaboration - networking with key researchers, government, industry and community partners in our areas of strength

Research culture - fostering professional development, peer support and recognition

Research skills - through mentoring and training

Communication - supporting engagement to increase community input into research and to disseminate research outcomes

Integration - undertaken within and across research themes and disciplines

*As outlined in the ILWS Research Strategic Plan
Since its formation in 2005, the Institute has consolidated its structure to facilitate efficient, effective, high quality and influential research.

As a result of CSU’s Centre Reaccreditation Review process in 2015 and 2016, changes were made to the Institute’s organisational structure, membership base, and research agenda, with an increased focus on the ‘societal aspect’ of the Institute.

In 2017/18 the number of new projects was nearly double that of the previous two years and the Institute has further extended the diversity, depth and reach of its research. This has consolidated its reputation as a leading research provider not only in Australia but also internationally, particularly in developing countries. Its research is regarded as being of high quality and impactful, recognised for its innovation and societal benefits.

The Institute is a key-player in ground-breaking research work in a number of areas including environmental water monitoring, fish migration, and cross-disciplinary work addressing natural resource management challenges. Examples include:

- Two large five year Long Term Intervention Monitoring (LTIM) projects for the Edward-Wakool river system (led by Professor Robyn Watts) and the Murrumbidgee River system (led by Associate Professor Skye Wassens) continued in 2017/2018 with the information generated contributing to the day to day and long term management and delivery of environmental water. (More on page 12)

- Research on fish migration being undertaken in Australia and the Lower Mekong Basin that aims to reduce the threat of irrigation and hydro-power on the long term-sustainability of fisheries resources. The ILWS team, led by Dr Lee Baumgartner is working across disciplines with Faculty of Science, and Faculty of Business, Justice and Behavioural Science, national and international governments and a range of local organisations to ensure significant engineering projects consider fisheries resources in a sustainable manner. There are three major projects underway that seek to provide food security and sustainable rice production in the Lower Mekong Basin (Quantifying improved fisheries productivity at fish rehabilitation sites in Lao PDR (2016-2020); improve sustainability of national infrastructure projects (Predicting redfin survival through the Snowy 2.0 scheme, Assignment 2 (2018-2019)); and balance hydropower and fisheries. (Assessing fisheries mitigation measures at Xayaburi Dam in Lao PDR (2017-2019)).

- An example of cross-disciplinary research is a ground water project in Pakistan. This four year project, which involves economists, social scientists, engineers and resource managers, commenced in 2016. It is seen as a step toward more effective groundwater use for social, economic and environmental benefits in Pakistan.

**Building Capacity**

In 2017/2018 the Institute secured external funding for 15 new major projects (more than $100,000 and up to $850,000) and 49 smaller projects (less than $100,000). These projects include additional funding/contract variations for some of our major projects. This demonstrates the Institute’s continuing ability to build on its established partnerships with funding bodies who now turn to the Institute for assistance in addressing issues that require its members’ research expertise to find solutions. Examples where ILWS ecologists have secured additional funding to enhance and “value-add” to existing projects include:

- In 2018 ILWS received an additional $500,000 from the Australian Centre for International Agricultural Research (ACIAR) and the United States Agency for International Development (USAID) to scale out existing work in Laos on fish migration to include four additional countries in the Lower Mekong Basin – Myanmar, Cambodia, Thailand and Vietnam. Smaller amounts were received from the National Geographic Society and IHE Delft (around $30,000 each) for PhD research on the Mekong Salmon, and fish migration ecology in the Mekong and Irawaddy Rivers.

- A further $200,000 from the NSW Office of Environment and Heritage (OEH) in 2018 for a project led by Associate Professor Peter Spooner to continue river red gum floristics and vegetation monitoring of an ecological tree thinning experiment implemented by NSW OEH in the Murray Valley National Park in conjunction with the Institute.

- Associate Professor Dale Nimmo’s ARC Discovery Early Career Researcher Award (2017-2020) project Can Indigenous land management forestall an extinction crisis? has secured additional research funding for projects, including PhD studies, around this topic. This includes funding from the Hermon Slade Foundation for the project Can Indigenous fire management restore declining mammal communities? (2016-2019), two Holsworth Wildlife Research Endowments for studies on the northern quoll (Dasyurus hallucatus) in the Pilbara and the impact of buffel grass invasion, and funding from the WA Department of Biodiversity, Conservation and Attractions for a project on the influence of invasive predators and fire regimes on northern quolls.

Some major new projects for our aquatic ecologists researching freshwater fish in Australia include a project funded by the Recreational Fish Trust studying Australian native fish spawning; another looking at native and invasive fish dispersal, spawning and trophic dynamics during a managed river-floodplain connection; research on the influence of water flows on fish recruitment as part of the Environmental Water Knowledge Research (EWKr) project; and a project on developing design guidelines for diversion screens that save native fish and enhance agricultural productivity.

Our terrestrial ecologists have new projects researching snakes, the impacts of feral livestock on savannah waterholes in the Northern Territory, northern quolls, mistletoe in macadamia orchards, the effects of rodent eradication on the threatened Lord Howe currawong, conserving biodiversity in growing cities, and grassy woodland species.

In line with the Institute’s increased emphasis on integrating social science and biophysical research, examples where ILWS social scientists have continued to secure funds for new research projects include:

- In the international arena, Dr Joanne Millar secured $528,703 funding for her second UK Darwin Initiative Fund project Community reforestation for biodiversity and livelihood diversification in Timor-Leste (2017-2021). In 2017 $50,000 was secured
from ACIAR for a scoping project on improving salinity and agricultural water management in the Indus Basin in Pakistan, building on the work being done for the ILWS groundwater project in Pakistan.

• In Australia, Associate Professor Peter Simmons secured further funding in 2017/18 from NSW Primary Industries through its Shark Management Strategy to continue research on the “human side” of shark management. In 2018 Associate Professor Rachel Whitsed secured funding from NSW Family and Community Services to continue research related to enhancing the wellbeing of older Australians in regional cities.

New members to the Institute with research expertise in health, psychology and sociology have developed new projects: on supporting isolated women in NSW; workforce wellbeing in Family and Community Services; and mental health assessment. (See more detail on page 16)

Our economists are also involved in new research projects for the High Performance Soils CRC (Cooperative Research Centre) and community driven economic change. (See more detail on page 16)

Ten major projects were completed in 2017/2018, four of which were funded by the Australian Research Council with CSU being the lead organisation for two - one on ecosystem services, the other on empowering social workers. Another major completed project was the four year Farm Power and Conservation Agriculture for Sustainable Intensification project in sub-Saharan Africa (Ethiopia, Kenya, Tanzania and Zimbabwe.)

As well as the new major projects which began in 2017 and 2018, the Institute has five major on-going projects - the two LTIM environmental water and monitoring and evaluation projects; the ACIAR fish passage rehabilitation project in Laos and four other Mekong Basin countries; and a project in Bhutan looking at protecting red panda and herder livelihoods.

EXTERNAL FUNDING

The research work undertaken by the Institute is made possible by significant financial and in-kind investment from CSU, funding bodies, government departments and agencies, and industry groups.

In 2017 and 2018 the Institute secured 65 externally funded new projects (which included contract variations to existing projects) as compared to 33 in 2015 and 2016. While the Institute continues to receive the majority of its external income from federal and state government funding, in 2017 and 2018 it also secured significant international funding and funding from industry.

In 2016 it secured $2.46M in external research income, and in 2017, $2.66M. This is an increase of more than $500,000 compared to the $1.95M it secured in 2014 and the $1.4M in 2015. Over the past five years (2013-2017) the Institute has secured a total of $11.64M in external research income to CSU, an increase of about $1M compared to 2011-2015.

While the figures for the 2018 are yet to be finalised, the upward trajectory in external research income is expected to continue.

The Institute has made deliberate efforts to attract funding for larger research projects with capacity for greater level of impact at the policy and changed practice levels. This approach reflects the strategic goals of the University.

Evidence of the success of these efforts includes the significant research funding it has secured from:

• the Commonwealth Environmental Water Office (CEWO) for the two five year environmental water monitoring projects for the Edward-Wakool and the Murrumbidgee River systems which commenced in 2014. Combined the two projects have a total value of over $7M. Additional funding has been provided for contract variations/associated projects.
• ACIAR for projects in Laos, (with research extended to include four other Lower Mekong Basin countries) as well as in Pakistan.
• The Darwin Initiative Fund for projects in Bhutan and Timor.
• Snowy Hydro Ltd for species tolerance experiments in a new purpose-built hydropower simulation laboratory at CSU’s Albury-Wodonga campus.

The number of new major (over $100,000) projects which commenced in 2017 and 2018 was also significantly up from 2015 and 2016; 16 as compared to six.

Funding partners in 2017/18 include:

International
Darwin Initiative Fund; IHE-Delft Institute for Water Education (The Netherlands); National Geographic Society; United States Agency for International Development (USAID)

National
Australian Centre for International Agricultural Research (ACIAR); Australian Research Council; Commonwealth Environmental Water Office; CSIRO; Fisheries Research & Development Corporation; Greening Australia; High Performance Soils CRC; Murray Darling Basin Authority; National Mental Health Commission

State
Family & Community Services (FACS); Forestry Corporation of NSW; NSW Office of Environment & Heritage (OEH); NSW Department of Primary Industries (NSW DPI); NSW Police Force; NSW Environment Trust & WA Department of Biodiversity, Conservation & Attractions; NSW Trade & Investment; Parks Victoria; NSW Ministry of Health

Regional
Albury City Council (NSW); Federation Council (NSW); Goulburn Broken CMA; Holbrook Landcare Network; Marathon Health; Mid North Coast Local Health District; Murray LLS & Murrumbidgee Primary Health District; Primary Health Network – Central and Eastern Sydney

Industry
Horticulture Innovation Australia Ltd; Karlték Pty Ltd; Murrumbidgee Irrigation Ltd & Snowy Hydro Ltd

Other
Australian Academy of Science (WH Gladstone’s Population & Environment Fund); Australian Academy of Technology and Engineering (Global Connections Fund); Australia and Pacific Science Foundation; ANZ Trustees Foundation (Holsworth Wildlife Research Endowment); Birdlife Australia; Hermon Slade Foundation; Ian Potter Foundation; Lake Cowal Foundation; Monash University; Recreational Fishing Trust; Society of Trust and Estate Practitioners & Wildlife Preservation Society of Australia
MAJOR PROJECTS

On-going new projects (over $100,000) commencing in 2017/18:


Community reforestation for biodiversity and livelihood diversification in Timor-Leste. Millar, J. (2017-2021) UK Darwin Initiative Fund, $528,703


Research activities for the Fish theme of the Environmental Water Knowledge Research (EWKR) project. (Contract variation). Humphries, P. in collaboration with MDRFC (2017-2019) CEWO via MDRFC, $206,587


Projects completed in 2017/18:


Predicting the delivery of ecosystem services in agriculture landscapes. Luck, G. (2014-2017) ARC Discovery grant, $360,000


Macca’s in the Mannus, Macquarie Perch Refuge in the Upper Murray. Baumgartner, L., Silva, L. & Kopf, S. (2017) NSW Department of Primary Industries/ Murray LLS, $120,000


On-going projects which commenced before 2017/2018:


Long Term Intervention Monitoring project-Murrumbidgee Selected Area. Stage 2. Wassens, S., Hall, A., Wolfenden, B. Partners NSW Department of Primary Industries (Fisheries), University of NSW, Riverina LLS, and NSW OEH, (2014-2019) CEWO, $3.5M

Quantifying improved fisheries productivity at fish passage rehabilitation sites in Lao PDR. Ning, N., Horta, A., Conallin, J. with Thorncraft, G (National University of Laos), Phonekhampheng, O. (National University of Laos), Singhanouvong, D. (Living Aquatic Resources Research Centre), Cooper, B. (UnISA) & Marsden,T. (Australasian Fish Passage Services), (2016-2020) ACIAR & USAID, $2.8M (Initial funding of $1.8M plus an additional $100,000 in 2018)

Improving groundwater management to enhance agriculture and farming livelihoods in Pakistan. Finlayson, M., Punthakey, J., Allan, C. & Mitchell, M. (2016-2020) ACIAR & CSU ($100,000), Total value of the project $2.15M


INTERNAL FUNDING

Internal funding (from ILWS) is available to members to initiate new integrated research projects that have a high probability of generating external funding with an emphasis on forming new research teams.

There are two types of funding schemes. Individual and team-based funding comes from ILWS’s annual allocated budget, which is its share of Federal Government Research
Block Grants. Member researchers can apply for funds (during specific funding calls) to enable the development of new research projects and associated research teams, whose work aligns with the Institute’s thematic research areas and current research priorities that has a strong probability of producing new external research funding streams.

Leverage funding (introduced in 2018) comes from a limited non-renewed pool that researchers are able to include in their research project grants (to external research funding bodies) as cash contributions from the University; co-contributions for leverage funding from the researcher’s home faculty and/or from the DVC-Research.

2017
The Institute provided financial support to 24 research projects and activities, the larger amounts being $25,000 (the first instalment of $100,000 over four years) towards the ACIAR funded groundwater project in Pakistan; $21,093 for the ARC LIEF project Australian Acoustic Observatory: A Network to monitor Biodiversity, in which CSU is a partner; and $41,660 to the ARC Industrial Transformation Hub – International hydropower innovation, with CSU as the lead.

It contributed $146,104 to individual members for travel, conference attendance, equipment, and project development, and $24,900 for team support (for team-based and integrated research activities) to 12 teams for project development, partnership meetings and collaboration.

2018
The Institute provided committed leverage support for 16 research projects and activities, the larger amounts being $24,933 towards the ACIAR funded groundwater project in Pakistan; $16,000 towards the NSW Fisheries Threatened Species projects with CSU as lead; and $16,053 towards the NSW OEH River Red Gum floristics and vegetation monitoring project with CSU the lead.

It contributed $119,632 to individual members mostly for travel, attendance at conferences, equipment, project development, and training. It contributed $93,007 for team support to 19 teams for project development, partnership meetings and collaboration, workshops/conferences and travel.

Our members have also secured other internal CSU funding to conduct research projects and activities including Faculty grants, CSU Teaching and Learning Grants, and CSU Sustainability Research Seed grants. Some of these projects in 2017 and 2018 included:

- the development of a 3D walkthrough of the Bonegilla Migrant Experience near Wodonga
- a project with landholders from the Corowa District Landcare Group and the Holbrook Landcare Group to investigate the soil habitats that burrowing frogs use and the relationship between soil health and burrowing habitats
- the Women in Regional Trades: Understanding Resilience project which is investigating why some women prosper in traditionally male-dominated occupations and industries while others do not
- a co-operative research enquiry which resulted in the thematic analysis paper “What does it mean to be part of the gendered space(s) of social work?” presented at an international conference in London, July 2017

MEMBERSHIP

The Institute’s reaccreditation in 2017 saw the implementation of a new Membership Policy, which included a realignment of postgraduate student topics with the Institute’s research focus; and a broadening of our research base to include researchers from additional disciplines.

The impact on our overall membership numbers has been minimal. However, there has been a change in our membership composition. In 2017 our total number of members was 231, similar to the 226 in 2016. However in 2018 our membership dropped to 204 members, mostly because of a decrease in student and adjunct members.

In 2017 membership comprised of 60 Full Members, 23 Associate Members (including six post-doctoral fellows), 94 Adjuncts and 54 Higher Degree Research (HDR) Student Members. In 2018 membership comprised of 64 Full Members, 25 Associate Members (including seven post-doctoral fellows), 80 Adjuncts and 35 HDR Student Members.

PUBLICATION PERFORMANCE

The Institute’s publication performance remain good with 97.64 HERDC points in 2016; 140.36 points in 2017. (Numbers not available yet for 2018.) Over a five year period (2013-2017) the Institute had a total of 528.66 points, an increase of more than 70 points compared to 2011-2015.

ENGAGEMENT

The Institute continued to raise its profile in 2017/2018 through engaging with the community and stakeholders in a variety of ways including hosting or co-hosting events; engaging with the media; social media activity; publication of its quarterly newsletter Connections; the ILWS web pages; members’ engagement and research activities, and awards for their contributions to their fields of expertise nationally and internationally.

One highlight was the Fish Passage 2018 conference which the Institute and NSW Department of Primary Industries hosted in Albury in December 2018. The conference, which certainly “put the Institute and Albury on the map” attracted over 350 delegates from over 30 countries.

Our researchers are also engaging more with Indigenous stakeholders with three new funded projects where Indigenous engagement is a key component.

Can Indigenous land management forestall an extinction crisis? (2017-2020)
Nimmo, D. ARC Discovery Early Career Researcher Award, $372,000

DECC, $20,000


More details our researchers’ engagement at the international, national and regional levels and with the media commence on page 25.
OVERVIEW

The Biodiversity Conservation theme is the platform for research projects undertaken by both the Institute’s terrestrial and aquatic ecologists working on one or more aspects of biodiversity conservation including landscape ecology, environmental history, vegetation and wildlife ecology, restoration ecology, plant-animal interactions, ecosystem services and native fish conservation.

Not only was there a significant increase in the number of new projects in 2017 and 2018 (31) compared to the two previous years (13), studies undertaken and being undertaken have also become more diverse which reflects new expertise brought by academics and researchers new to the Institute.

New projects include research on threatened or endangered species such as the southern bell frog, inland carpet python, the Lord Howe currawong, northern quoll and small-bodied native fish.

Other new projects include ground-breaking research work being done for Snowy Hydro Ltd for its Snowy 2.0 project; research on the impact of feral ungulates on waterholes in the Northern Territory; mistletoe management in macadamia orchards; and the development of design guidelines for diversion screens. The projects are providing valuable knowledge for NRM managers, industries and agencies for decisions on management options.

Many projects built on previous research work and/or established partnerships.

An example is the project monitoring the effectiveness of an ecological thinning trial of River Red Gum saplings, is part of an on-going research partnership between NSW OEH and the Institute. ILWS researchers have been involved in this work since 2012. In 2015/16 they provided base-line data prior to the ecological thinning treatments of experimental plots in the Murray Valley National Park and have been monitoring the effects of the thinning in 2017.

Research being done on indigenous land management, and in particular the use of fire, as a way of protecting Australian native species from extinction, is continuing to expand with three PhD studies, supported by various research grants, contributing new knowledge around this topic.

There are a number of PhD research students under this theme where supervisors have secured research grants to help fund expensive field work, travel costs and laboratory analysis.

Major projects completed in 2017 and 2018 include:

- an ARC Discovery project which looked at the ecosystem services provided by birds in agricultural landscapes. For this study the researchers conducted some of the most comprehensive landscape-scale experiments to date on ecosystem service delivery by birds and insects across different agricultural land uses.
- a second ARC Discovery project (led by QUT) was the “springboard” for the establishment of a national “acoustic observatory” for environmental and ecological research which teams up acoustic recorders with automated call recognition. An ARC Linkage, Infrastructure, Equipment and Facilities (LIEF) grant (2017-2020) is providing the funding for development, purchase and siting of 400 acoustic recorders at 100 sites across Australia.
- a project jointly funded by NSW Department of Primary Industries and Murray Local Land Services on the threatened native fish species Macquarie Perch in the Upper Murray which correlated the presence/absence of Macquarie perch with habitat features. Recommendations from the project helped to inform the National Macquarie Perch Recovery Plan (2018). A similar project on Murray small-bodied threatened species has presented a management plan for Southern Pigmy Perch recovery and conservation at Coppabella-Jingellic Creek, NSW.

In all 15 projects which sit under this research theme (including four which also sit under the Environmental Water research theme, and one which also sits under the Rural and Regional Communities theme) were completed in 2017 and 2018.

Topics included native fish, frogs, the herpes virus for carp control, ecosystem services, acoustic recording, grassy woodland species, and landscape structure.

NEW PROJECTS

Acoustic Observatory: a network to monitor biodiversity across Australia. (2017-2020) ARC Linkage Infrastructure, Equipment and Facilities project ($900,000) led by Queensland University of Technology with ILWS team members Watson, D., Luck, G. & Nimmo, D.


Fish investigations associated with Snowy 2.0 - Snowy Hydro Ltd. (Assignment 1). Baumgartner, L., Silva, L. & Ning, N. (2017-2020) Snowy Hydro Ltd. $61,647 Project details


PIT tag data analysis project. Huang, X., Baumgartner, L. & Li, J. (2018-2019) Karitek Pty Ltd., $25,000 Project details


The influence of invasive predators and fire regimes on northern quolls. Nimmo, D. & Moore, H. (PhD student) (2017-2020), WA Department of Biodiversity, Conservation and Attractions, $78,000. Project details


Both Biodiversity Conservation and Environmental Water themes


Both Biodiversity Conservation and Sustainable Development (International) themes


ON-GOING PROJECTS


Both Biodiversity Conservation and Environmental Water themes


COMPLETED PROJECTS


Ecology of the northern quoll (Dasyurus hallucatus) in the Pilbara. Nimmo, D. & Moore, H. (PhD student) (2017-2018), Holsworth Wildlife Research Endowment, $5500


Macca’s in the Mannus, Macquarie Perch Refuge in the Upper Murray. Baumgartner, L., Silva, L. & Kopf, S. (2017) NSW Department of Primary Industries/Murray LLS, $120,000. Project details

Murray Small-bodied threatened fish project. Baumgartner, L., Silva, L. & Kopf, S. (2017) NSW Department of Primary Industries/Murray LLS, $52,000. Project details

Predicting the delivery of ecosystem services in agricultural landscapes. Luck, G., Saunders, M. & Peisley, R. (PhD), (2014-17) ARC Discovery Grant, $380,000. Project details

River Red Gum Ecological thinning trial (Honours project). Spooner, P. (2017) NSW OEH, $8000


Both Biodiversity Conservation and Environmental Water themes


Complementary measures for native fish. Baumgartner, L. (2017) CSIRO/Murray-Darling Basin Authority: $33,000

Development of strategies to optimise release and clean up strategies underpinning possible use of herpes virus 3 (CyHV-3) for carp biocontrol in Australia. Silva, L. & Baumgartner, L. (2017) Fisheries Research & Development Corporation. $39,000. Project details

Ecological assessment of the status of the Southern Bell Frog and Sloane’s froglet in Mywurlie station, One Tree NSW. Wassens, S., Knight, A., Walcott, A. & Heard, G. (2017-2018), Murrumbidgee Irrigation Ltd, $46,948. Project details
Both Biodiversity Conservation and Rural and Regional Communities themes


HDR STUDENTS

In 2017 and 2018 four PhD students whose research topic sat under this theme graduated. They were:

Dr Clare Lawrence: Life history and behavioural responses to nest predation in Australian and New Zealand songbirds: can naive birds adapt to exotic predators? Principal supervisor Dr Melanie Massaro

Dr Zsofia (Sophie) Palfi: The influence of soil disturbance on seed dispersal by ants in roadside environments in southern NSW, Australia. Principal supervisor Associate Professor Peter Spooner

Dr Rebecca Peisley: The benefits and costs of bird activity in agroecosystems. Principal supervisor Professor Gary Luck

Dr Cecile Van der Burgh: Connectivity conservation: an exploration of practitioners’ experiences in Australia. Principal supervisor Associate Professor Peter Spooner

Current students whose research is aligned with this theme are:

Pauline Andre: Determinants of vocal variation in Australian cuckoos. (Masters) Principal supervisor Professor David Watson

Celia Connor: Invasive woody plants in linear habitats. Principal supervisor Associate Professor Peter Spooner

Leanne Greenwood: The interactions between Indigenous burning, plant communities and fungal communities in Australia’s western deserts. Principal supervisor Associate Professor Dale Nimmo

Joshua Hodges: Post-fire seedling recruitment in grasslands of south-eastern Australia. Principal supervisor Dr Jodi Price

Helenna Mihailou: The impacts of feral ungulate vegetation to ephemeral savanna waterholes and their flow-on effects for native birds. Principal supervisor Dr Melanie Massaro

Harry Moore: Northern quolls in the Pilbara region of WA. Principal supervisor Associate Professor Dale Nimmo

Dena Paris: Foraging behaviours, habitat use and density related reproductive performance and dispersal in the endangered Chatham Island black robin. Principal supervisor Dr Melanie Massaro

Dr Richard Segal: Investigating the effects of rodent eradication on the threatened Lord Howe currawong. Principal supervisor Dr Melanie Massaro

Sarah Talbot: An Investigation of Behaviour, Physiology, Morphology and Stability of Animal Personality, in order to Develop a Valid and Standardised Personality Assessment Tool: A Case Study in the Domestic Ferret (Mustela putorius furo). Principal supervisor Associate Professor Skye Wassens

Anna Turner: Chytrid fungus on southern bell frogs in the Lowbidgee and Gippsland Lakes. Principal supervisor Associate Professor Skye Wassens

Elizabeth Znidersic: Optimising monitoring techniques for cryptic wetland birds. Principal supervisor Professor David Watson

RESEARCH ACTIVITIES

As well undertaking externally funded research projects, ILWS members (including Adjunct members) are also engaged in research activities/projects that have either received internal funding from ILWS and/or CSU; are not managed by ILWS; or are non-funded but aligned with their research interests.

Examples under this theme include:

- a long-term study of mistletoes
- a world-first trial in which creeping mistletoe seeds have been planted on plane trees in inner Melbourne as a way of increasing biodiversity
- research for a book on Travelling Stock Routes and Reserves
- research on global scale patterns in grassland community assemblies
- an investigation of the relationship between burrowing frogs and soil health
- development of a conservation plan for declining turtle numbers
- a three year study on how heat waves and diet affect folivorous mammals - the ringtail possum
- the impact of chytrid on frogs (bell frogs) in Australia
- involvement in projects for the FAUNA (Future-proofing Australasia’s Unique Native Animals) Research Alliance, a network which connects researchers and conservation “end user” practitioners from 47 organisations. Projects include the Rewilding Little Desert project in partnership with Conservation Volunteers Australia
- an investigation of “call playback”, a tool used by many birders to help identify birds, and its impact on birds
- assistance with processing and analysing data sets for the NGO Panthera, in Cali, Colombia, which is working to save jaguars
- an Artist In Residence project with Falls Creek Resort Management (FCRM) based on Bogong High Plains’ peatlands’ research

In Focus

Predicting the delivery of ecosystem services in agricultural landscapes, (2014-2017)

Funding

ARC Discovery grant, $360,000

Researchers/Investigators

Professor Gary Luck, Dr Manu Saunders (post-doc) and Dr Rebecca Peisley (PhD)

Description

The ecological sustainability of Australian agriculture relies on services (for example, pollination) provided by ecosystems. Service provision is threatened by environmental change, but there is no established approach for predicting the impact of change on services.

This project undertook the most comprehensive experimental examination of ecosystem–service delivery ever conducted in Australia, testing the predictive capacity of an approach that links environmental change with variation in service provision through species’ traits.

The project consisted of three sub projects.
1. Activities of birds and insects in apple orchards

For this activity, the researchers examined the contribution of birds and insects to the biological control of pests, the contribution of insects to crop pollination, as well as the damage these organisms can cause to the crop. Exclusion field experiments were conducted over two growing seasons from September to March in 2014/2015, and 2015/2016 in six apple orchards with two orchards each in Shepparton in Northern Victoria; Batlow in the South West Slopes region, NSW, and Harcourt in the Central Highlands, Victoria. The orchards were graded from the lowest intensity management (the most organic) through to the highest intensity management (greater use of pesticides, clearing of understorey). Findings were:

- There is a pattern related to regions (landscape history and the level of management across an entire landscape affects what is happening on individual farms)
- Insect damage to apples was higher in netted branches (bird exclusion) which suggested birds were providing some service to growers by reducing pest insect abundance
- More services are generally provided in orchards where there are more insect-eating birds
- There was very little damage to the orchards, overall, from birds
- Earwigs have a potential role (as a predator of other insects) in controlling damage to fruit

2. Carcass disposal in grazing landscapes

In grazing areas, the researchers investigated the contribution of scavenging birds and insects to the breakdown of animal carcasses, how this might provide a service to farmers and the ecosystem, and how landscape context influences the provision of this service. Seventy-two platforms, about 2m off the ground, were erected in autumn in 2014 and 2015 on a property at Docker Plains in North East Victoria with rabbit carcasses (wired down) placed on the platforms and also on the ground for eight days. The platforms were placed in different landscape contexts —open paddocks, near remnant vegetation along the river, next to isolated paddock trees and within a National Park. Bird activity was monitored using motion sensing cameras and insect abundance (maggots) on the rabbit carcasses was measured.

Findings were:

- A number of raptors contributed to the breakdown of carcasses, with common species being the Whistling Kite and Brown Goshawk. Australian Ravens also visited carcasses, but their numbers varied greatly across years
- Foxes seemed to have a minor role in carcass disposal, visiting < 5 ground carcasses
- Raptors preferred to feed on the carcasses when they were on the ground rather than on platforms
- The highest rate of carcass disposal occurred in paddocks where large isolated trees had been retained.
- The retention of large paddock trees is crucial in grazing landscapes to provide raptors and other birds with roosting and nesting sites, and facilitating the delivery of waste removal services

3. Contribution of raptors to pest bird control in vineyards

The researchers examined whether the provision of perches in vineyards for raptors altered pest bird behaviour to the point where it reduces the damage being done to grapes. Twenty five perches were erected in vineyards in North East Victoria in 2015/16 and monitored with motion sensor cameras. Raptor and pest bird activity was measured, and grape damage was assessed at varying distances from perches and other landscape features.

Findings were:

- The perches were used mostly by Australian magpies rather than raptors
- Damage to grapes was less underneath the perch sites, possibly because magpies, as a larger, aggressive species, modified the behaviour of the smaller pest bird species
- Pest birds did not use the perches and further research is required on the effectiveness of providing perches for predatory and aggressive birds in reducing damage to grapes

Outcomes


Outcomes

The major outcome was a greater capacity for agriculturalists to maximise ecosystem benefits and increase economic returns, and improved biodiversity conservation through recognition of its contribution to agriculture.
Images

1. Waterhole in Limmen National Park, Northern Territory
2. PhD student Liz Znidersic setting up her recording equipment at Oak Ridge Reservation, East Tennessee, USA
3. Dr Melanie Massaro with an endangered Lord Howe currawong
4. New deployment for the Acoustic Observatory in the Sturt National Park
5. Professor Rebecca Bird, Associate Professor Dale Nimmo and PhD student Leanne Greenwood setting up a camera trap at one of the burn sites in the Western Desert
6. Dr Stacey Kopf and Dr Luiz Silva with threatened Macquarie perch which they caught in Mannus Creek in the Upper Murray
ENVIRONMENTAL WATER

OVERVIEW

While this theme is the platform for the Institute’s two major environmental water monitoring projects, and related projects, in the Edward-Wakool and the Murrumbidgee river systems, it is also home for the institute-based Fish Ecology Collaborative Research Unit, and other fish ecology and irrigation technology projects. Past, current, emerging and potential research areas include wetland inventory and assessment, ecological indicators, ecology of aquatic biota, ecosystem response to dam and fishway management, aquatic chemistry, adaptive management and riverine ecosystem process. Research projects on social, cultural and institutional arrangements for river and wetland management also feature in this theme.

In 2017 and 2018 researchers involved in the Institute’s two major environmental water projects continued to evaluate ecosystem responses to environmental water in the Edward-Wakool River System, and the Murrumbidgee River System; thereby providing water managers with important and timely information for the day to day and long term management and delivery of environmental water.

The projects are funded by the Commonwealth Environmental Water Office, through its Long Term Intervention Monitoring (LTIM) Program. Both projects involve working with partner organisations and community stakeholders.

Edward-Wakool project

For the project in the Edward-Wakool system, which is led by Professor Robyn Watts, partners are the NSW Department of Primary Industries (Fisheries), Monash University, Griffith University, the NSW Office of Environment and Heritage (OEH), and LaTrobe University.

The project’s main focus is on the fish community - its movement, breeding and recruitment - as well as on water quality, primary production, and riverbank and aquatic vegetation. The long-term data is enabling researchers to use statistical modelling to predict and evaluate the responses to Commonwealth environmental watering.

Key project findings are:

- Commonwealth environmental water maintained longitudinal connectivity and increased the extent and duration of lateral connectivity of flood runner and benches compared to periods of operational flows
- Environmental water has helped maintain good water quality during low flows and poor water quality events
- There has been an increase in the cover and diversity of aquatic vegetation in response to environmental watering
- Winter environmental watering facilitated movement of golden perch and silver perch throughout the system. Winter base flows assisted movement of Murray cod back into the system following a hypoxic blackwater event in 2016
- Native fish diversity and condition was maintained.

Researchers work closely with and advise stakeholders such as CEWO, the Edward-Wakool Environmental Water Reference Group and the Murray Dissolved Oxygen Group.

Projects completed in 2017 and 2018 aligned with this project include a vegetation monitoring project in the Colligen Creek System, funded by Murray LLS; and a project part-funded by the Forestry Corporation of NSW which studied the effects of flows from the Murray River through the Koondrook-Penicoota Forest on the productivity of the Wakool River as a result of flooding in Spring, 2016.

Murrumbidgee project

For the project in the Murrumbidgee system, which is led by Associate Professor Skye Wassens, partner organisations are NSW Department of Primary Industries (Fisheries), University of NSW, and NSW OEH. The project utilises a highly integrated design, which enables the evaluation of ecological responses to environmental watering in both wetland and channel habitats at a range of spatial and temporal scales and trophic levels.

The team communicate their findings regularly to the Environmental Water Allocation Reference Group (EWARG) and work closely with State and Commonwealth water and land managers to design, implement and assess water actions through the Murrumbidgee River system.

Key findings from this project indicate that Commonwealth environmental watering actions is making a significant contribution to improved ecological outcomes. These include:

- Establishment of diverse aquatic communities through the Lowbidgee floodplain
- Promotion of successful breeding and recruitment of the southern bell frog (and other species)
- Inundation of floodplain wetlands created habitat for a diverse assemblage of waterbirds (including the nationally endangered Australasian Bittern) despite the dry conditions across much of the Murrumbidgee Selected Area
- The delivery of environmental water through the Murrumbidgee River benefitted native fish species in the main river channel.

A number of shorter-term projects related to, or contract variations for, this project were completed in 2017 and 2018. These include targeted monitoring of hypoxic blackwater; monitoring a bird-breeding event in 2016-2017; and waterbird and prey responses to inundation of the Western Lakes in 2016-2017.

Other projects

While there has been a similar number of new projects (11) under this theme in 2017 and 2018 compared to the number of new projects (10) in 2015 and 2016 when research was conducted under the Sustainable Water Strategic Research Area, the new projects are more diverse with a number linked also to the Biodiversity Conservation theme.

Examples of these include:

- a major project funded by the Ian Potter Foundation which is developing guidelines for diversion screens (for irrigation water) that will help protect native fish
- a project which commenced in 2017 and is funded by industry partner Murrumbidgee Irrigation Ltd that is assessing the status of the Southern Bell frog and Sloane’s froglet in Mywurlie station, One Tree, NSW.
ILWS researchers working with Indigenous communities across the Murrumbidgee, Edward and Murray rivers exploring environmental monitoring opportunities and challenges. The research design included an initial participatory mapping exercise which was then complemented by on-country meetings with relevant industry practitioners.

NEW PROJECTS


Both the Environmental Water and Biodiversity Conservation themes


ON-GOING PROJECTS


Long Term Intervention Monitoring project-Murrumbidgee Selected Area.

Stage 2, Wassens, S., Hall, A., Wollenden, B. with NSW Department of Primary Industries (Fisheries), University of NSW, Riverina LLS, and NSW OEH, (2014-2019) CEWO, $3.5M Project webpage

Research activities for the Fish theme of the Environmental Water Knowledge Research (EWKR) project. Contract variation, Humphries, P. in collaboration with MDRFC (2017-2019) CEWO via MDRFC, $206,587. Project details

Both the Environmental Water and Biodiversity Conservation themes

Fishing for answers: Unlocking the secrets of spawning and recruitment for Murray-Darling recreational species. Baumgartner, L., Doyle, K., Silva, L. & Thiem, J. (2016-2020) NSW DPI Recreational Fishing Trust. $100,000 Project details

Both the Environmental Water and Sustainable Development (International) themes

In search of the elusive Mekong salmon. Baumgartner, L. & Vu, V.A. (PhD student), (2016-2018) National Geographic Society Research Grant, $30,080

COMPLETED PROJECTS


Under the Biodiversity Conservation and Environmental Water Themes


Complementary measures for native fish. Baumgartner, L. (2017) CSIRO/Murray-Darling Basin Authority, $33,000


HDR STUDENTS

In 2017 and 2018 nine PhD students whose research topic sat under this theme graduated. They were:

Dr Carmen Amos: Response of frogs to environmental factors at multiple scales in the Lachlan catchment of NSW. Principal supervisor Associate Professor Skye Wassens

Dr Adrian Clements: The effect of water column nutrient enrichment and water regime on vegetation in shallow, ephemeral, freshwater lakes. Principal supervisor Professor Max Finlayson

Dr James Dyer: The role of flow regime and movement in stream shrimp assemblages. Principal supervisor Dr Paul Humphries

Dr Xiaoying Liu (Sha Sha): Applying a Transdisciplinary Approach to Improve the Understanding of Current and Future States of Inland Ephemeral Wetlands: An Australian Case Study. Principal supervisor Professor Max Finlayson

Dr Jess Schoeman: Optimising water management in the Anthropocene? A case study of adaptive governance in a sub-catchment of the Murray-Darling Basin, Australia. Principal supervisor Associate Professor Catherine Allan.

Dr Kylie Singh: Ecology of the Macquarie Turtle (Chrysemys macquaria macquari) in Australia’s Murray-Darling Basin: Are freshwater fish an effective ‘umbrella taxa’ for turtle conservation? Principal supervisor Professor Robyn Watts

Dr Abbie Spiers: An exploration of community perceptions about wetland health in New Zealand. Principal supervisor Professor Max Finlayson

Dr Daniel Szovit: Trait Divergence in river and reservoir populations of Australian smelt (Retropinna semoni). Principal supervisor Professor Robyn Watts.

Dr Amelia Walcotte: The frog community responses to environmental change: a case study in the mid Lachlan. Principal supervisor Dr Andrew Hall.

Current students whose research is aligned with this theme are:

Inam Ahmed: Modelling in-stream hydraulics: Investigating the impact of scale. Principal supervisor Professor Robyn Watts

Dale Campbell: Reconstructing past floodplain environments. Principal supervisor Dr Paul Humphries

Paul Kew: Adaptive Grid Refinement using the Generalized Finite Difference Method. Principal supervisor Dr Zhenquan Li (Jan)

Kendal Krause: Zooplankton in the Murrumbidgee: the effects of native and exotic fish species, density and behaviour on zooplankton community structure. Principal supervisor Associate Professor Skye Wassens

Matt O’Connell: Exploring the potential of taxidermy Murray cod mounts to inform past environmental conditions. Principal supervisor Dr Paul Humphries

Michael Vanderzee: Socio-ecological impacts of water recovery for the environment in the Murray-Darling Basin. Principal supervisor Professor Max Finlayson

RESEARCH ACTIVITIES

As well undertaking externally funded research projects, ILWS members (including Adjunct members) are also engaged in research activities/projects that have either received internal funding from ILWS and/or CSU; are not managed by ILWS; or are non-funded but aligned with their research interests.

Examples under this theme include:

- effects of flooding on black box woodlands in North West Victoria
- post-doc research on the historical ecology of Murray Cod
- a glasshouse experiment to examine carbon and nutrient release and effects on dissolved oxygen (DO) following the inundation of different types of soils, grasses and crops from the Edward-Wakool floodplain
- a volunteer international research collaboration investigating carbon emissions from dry wetlands and river sediments around the world

In Focus

Billabong-Yanco Creek Wetland Monitoring Project (2017-2018)

Funding

Murray Local Land Services, $80,216

Researchers/Investigators

Dr Amelia Walcotte, Associate Professor Skye Wassens, Dr Andrew Hall, Dr Ben Wolfenden and Associate Professor Ben Wilson
Description

Like other systems in the Murrumbidgee catchment, the hydrology of the Billabong-Yanco creek has changed immensely due to water extraction and regulation. While the delivery of environmental water to help maintain and improve the water-dependent creek and wetland communities has been an objective for CEWO, very limited information on the biota of the system is available to guide such actions.

This ILWS project provided baseline knowledge on a range of floodplain wetland characteristics with important implications for natural resource management of the system. Fifteen wetlands were selected across the system for their high conservation value. For each wetland:

- wetland boundaries were delineated (via spatial analysis)
- rapid habitat assessments described over and understorey vegetation
- wetland soil carbon stocks were estimated from a range of depths throughout the wetlands
- frog species diversity was described from two surveys, and
- call recorders monitored frog calling activity at a subset of the sites on an hourly schedule from October 2017 to February 2018.

The key findings from the project include:

- wetland carbon stocks increased with depth meaning that soils which retained water for longer durations stored comparatively higher levels of carbon
- a small population of Southern bell frogs (a threatened species) were identified along the mid-Yanco creek system
- the hourly call recorder data revealed multiple breeding attempts by Southern bell frogs between October 2017 and February 2018 at one of the sites
- a higher diversity (and abundance) of frog species were observed in wetland habitats with a higher complexity and coverage of aquatic plants, as well as where water persisted during peak breeding times.

Outputs

Findings of this research were made available to the Yanco-Billabong community to communicate the floodplain assets within their region and the benefits of flooding (natural and environmental) to maintaining these important wetland systems. This included summary letters for the participating landholders following each trip and a summary of results. Community engagement activities included interactive presentations to school groups at the ‘Creative Catchment Kids program: ‘Who lives in the Water? Billabong-Yanco Creek Gala Event’ and to the general public at the ‘Wetland Wonders of the Yanco, Billabong and Colombo Creeks information night’. Both events were organised by Murray Local Land Services.

Outcomes

The high carbon storage estimated for key wetlands in the system, as well as identification of a small population of threatened frog species (the Southern bell frog) has important implications for future water delivery to the Yanco-Billabong system.

Images

1. Dr Amelia Walcott taking a carbon sample at a Billabong-Yanco Creek wetland
2. Southern bell frog
3. Dr Julia Howitt checking measurements taken by the portable greenhouse gas analyzer
4. Dr Amina Price (MDFRC) and Dr Paul Humphries sampling in the Ovens River, Victoria. Pic: J. Davison
This theme provides a platform for a wide range of research projects where the main focus is enhancing the well-being and livelihoods of rural and regional communities. Many past and current projects include a strong social component. Past, current and emerging topics include safe domestic water; entrepreneurship, rural social services, human non-human coexistence, food security, NRM governance, social justice, rural development, eco health, human health (including mental health), and biocultural and Indigenous research.

Evident in the following lists of projects that sit under this theme is the strong "societal" aspect of the work that has been, and is being undertaken with researchers coming from a broad range of disciplines that includes economics, sociology, psychology, criminology, communications, social science, social technology, heritage and spatial science.

As well as providing a "home" for the research projects of a number of members who have joined the Institute since its reaccreditation, the theme also brings together much of the work previously conducted under six of the Institute’s former Strategic Research Areas and Research Themes - regional entrepreneurship and development; environmental justice and governance for social change; food security and regional Australia; social research for regional Natural Resource Management; spatial research in environment, agriculture and health; and climate change.

In 2017 and 2018 there were 24 new projects under this theme, 12 of which were completed within the two years. Again some projects are aligned with more than one theme.

There were 17 projects completed under this theme including an Australian Research Council Discovery project (led by UTS) on humanitarian immigrant entrepreneurs in private and social enterprises; an energy efficiency education project; and two projects with an economic focus - one a literature scoping study funded by the CRC (Cooperative Research Centre) for High Performance Soils, and another on community driven economic change. A second ARC Discovery project, led by CSU, Virtuous practitioners: empowering social workers, is nearly complete.

Our researchers are continuing to establish, maintain and build on partnerships. For example in 2017 and 2018 there were two more projects funded by Murray Local Land Services (LLS) as a result of the long term commitment by Murray LLS to social research and its associated investment.

Another example is the series of "shark studies". Sharks are prominent in the Australian psyche and policy options concerning coexistence and management of sharks can divide communities. Since 2017, Institute researchers have been involved in a series of social research projects, including a PhD study, funded by the NSW Department of Primary Industries through its Shark Management Strategy.

Similarly researchers are now on their second Family and Community Services NSW Liveable Communities project with studies seeking to enhance the well-being of older Australians in regional cities. The project, again in partnership Albury City Council, builds on the work done for the previous Better Parks for People project.

Our economists and social researchers are continuing to be involved in projects for the CRC for High Performance Soils, under the Soil CRC’s Program One - Investing in high performance soils. The goal of their current project on hedonic pricing, “How better soil management could affect property prices?”, is to complete the first phase of a stream of work that seeks to understand how soil management practices influence property prices, so farmers can better understand the pay-off from investments in improving soil management.

There are also a number of other projects around health and well-being including evaluations of NewAccess, a beyondblue early intervention program designed to support people with mild to moderate anxiety and/or depression in Australia, for two different primary health Networks; a study of workforce wellbeing in the NSW Family and Community Services department; and a project in partnership with the Murrumbidgee and Western NSW Local Health Districts, and the Parent Infant Research Institute, on the MumMoodBooster program, a new internet cognitive behavioural therapy program for isolated new mothers.

NEW PROJECTS


Assessing and developing a walkability index targeted to older Australians in regional cities. Whitsed, R. & Horta, A. (2018-2019) Family & Community Services – Liveable Communities Grants, $30,000 Project details


Shark Sentiment Study. Simmons, P. & Mehmet, M. (2017-2020), NSW Department of Primary Industries, $91,000


Group Capacity snapshot project. Allan, C. (2017-2018) Murray LLS, $10,000


Powering Down: an energy efficiency education project. Masterman-Smith, H., Rafferty, J. & Sheahan, M. and Albury City Council, (2017) NSW Environment Trust, $100,000 Project details


Secure Safe Domestic Water (SSDW) in the Central Darling Region: Regional stakeholder engagement action events. Finlayson, M. (2017) MDBA, $4546

Shark deterrents and detection: Community perceptions, sentiment and preferences for shark management strategies. Simmons, P., Mehmet, M. & Clarke, R. (UOW) (2017) A collaborative project between CSU (ILWS), UOW and NSW DPI with funding from the NSW Shark Management Strategy (SMS) Competitive Annual Grants Program. Project details


Under Rural and Regional Communities and Biodiversity themes


ON-GOING PROJECTS


Optimised field delineation of contaminated soils. Horta, A. (2015-2019) ARC Linkage Project led by University of Sydney, with partners CSU & Environmental Earth Sciences International Pty Ltd. Project details

COMPLETED PROJECTS


Assessment of the attitudes of beach and ocean end-users to shark mitigation since trials of SMART Drumlines in NSW. Simmons, P. & Mehmet, M. (2018) NSW DPI, $55,012 Project details

Better Parks for People. Whitsed, R., Black, R. & Harvey, R. (2016-2017) FACS NSW Liveable Communities, $62,727 Project details

Under Rural and Regional Communities and Environmental Water themes


In 2017 and 2018 six PhD students whose research topic sits under this theme graduated. They were:

Dr Bronwyn Hyde: The lived experience of acute mental health inpatient care: What’s recovery got to do with it? Principal supervisor Professor Manohar Pawar

Dr Moragh Mackay: Transforming governance together: A co-inquiry into practices for transitioning from top-down to adaptive co-governance. Principal supervisor Associate Professor Catherine Allan

Dr Arif Rohman: Voices from a Leper Colony: A Critical Ethnography of the Impacts of Community Empowerment and Social Inclusion Program at the Sitanala Leprosy Village, Indonesia. Principal supervisor Professor Manohar Pawar

Dr Samantha Strong: Exploring Paradoxes of Native Vegetation Management in the Context of Bushfire in South East Australia in the 21st Century. Principal supervisor Associate Professor Catherine Allan

Dr Buyani Thomy: The value of river health to the residential community of the Georges and Cook river catchments. Principal supervisor Professor Mark Morrison

Dr Jennifer Woods: Experiences of Community Spirit in Flood Recovery: Exploring the Meaning and the Opportunities for Community Development. Principal supervisor Dr Jonathon Howard

Current students whose research is aligned with this theme are: Jose Abalo (DSW): Transitions issues
RESEARCH ACTIVITIES

As well undertaking externally funded research projects, a considerable number of ILWS members (including Adjuncts) whose research interests are aligned with this theme are engaged in research activities/projects that have either received internal funding from ILWS and/or CSU; are not managed by ILWS; or are non-funded. The topics of these various research activities reflect the breadth of this theme and include engagement with Indigenous communities.

Examples include:

- a research project on an ethnography of standing stone Aboriginal heritage sites throughout the Pilbara and into the eastern desert areas of WA. The project is being funded through BHP’s Heritage Research Division, Perth
- the Securing Safe Domestic Water (SSDW) for Regional Australia project. This collaborative research project, which commenced in 2016, was initially focussed on the Gulf Region of Far North Queensland but has since expanded to include the Central and Lower Darling region of NSW Project details
- the on-going Reviving Regional Railways project for which A/Prof Gray a new documentary “Living Rail – In Junee and the Riverina” was launched at the Junee Roundhouse Museum’s 70th birthday celebrations in 2017.
- research on community resilience in disaster management
- an investigation of including older people in the teaching of ageing with industry partners Nambucca Valley Care, Navorina Nursing Home in Deniliquin, Holy Spirit Nursing home in Dubbo and Riverina Institute of TAFE.
- a project in the mid North coast of NSW looking at improving water supply to various coastal communities.
- the building of a digital library of CSU and its precursor institutions’ student media publications
- a collaboration with the Museum of the Riverina for a history project about LGBT memory in Wagga Wagga and surrounding regions
- development of curriculum material and a 3D walkthrough of the Bonegilla Migrant Experience
- the Women in Regional Trades: Understanding Resilience project which has held industry consultations in Wagga Wagga; Bathurst and Albury
- a project on Free Trade Agreements and their implications for Australian agricultural products trade and regional farm economies
- involvement in a three year project (2018-2020) administered by the Graham Centre and funded by
Horticulture Innovation Australia looking at the economic impact of IPM (Integrated Pest Management) on Australian horticultural (fruits and vegetables) crops

- an exploration of gender and indigenous issues including the gender spaces of social work
- a research project funded by CenWest and WabiSabi, a company which gives people the opportunity to customise their message before they pass away
- two social media research projects, one in relation to Australian audiences and service industries - customer engagement for water businesses; and another on branding research for non-profit organisations
- a project that aims to evaluate the customer engagement (CE) strategies of the 2018 Victorian water price review process.
- the development of a new on-line platform Wayfinder, A Resilience Guide for Navigating Towards Sustainable Futures. The platform was created in partnership with the Stockholm Resilience Centre and the Resilience Alliance.
- participation in an exhibition “The Habitat of Time”, Casula Powerhouse, Sydney, April 19 to May 5, 2018 as part of part of an international research initiative between UNSW Art & Design in collaboration and the Foundation for Art and Creative Technology in the UK
- a photographic exhibition as part of the Kiska Exhibit, Alaska Aviation Museum, April 12, 2018 to January 27, 2019
- a project to extend Albury newspapers coverage on Trove, with the digitising of papers back to 1881 and forward to 1942
- development of spatial models of noncommunicable diseases such as diabetes and cardiovascular disease in Albury-Wodonga
- an investigation into the lives and deaths of Indian hawkers in the Southern Riverina and North East Victoria in the late 1900s and early 2000s

In Focus

Powering Down: an energy efficiency education project (2017)

Funding
NSW Environment Trust, $100,000

Researchers/Investigators
Dr Helen Masterton-Smith, Dr John Rafferty, Dr Marie Sheahan and partner Albury City Council

Description
Being located in Climate Zone 7, Albury LGA experiences extreme temperatures and high associated energy consumption and costs (ABS 2012). ‘Hard to reach’ households often face these burdens on lower incomes and with limited housing options. For example, public housing residents generally struggle with energy efficiency and thermal comfort issues (AIHW 2013). However, little was known about local energy efficiency practices and challenges or how best to assist residents.

As part of this project workshops were held to share valuable energy efficiency knowledge and focussed on capacity building within the community. There were many learning opportunities for local agencies about how to enhance community engagement and development strategies on this and other issues (e.g. water, waste).

Local schools and households were offered opportunities to reinforce the importance of energy efficiency across these interconnected sections of the community and maximises the potential of engaging hard to reach households. The schools’ component applied STEM subjects to the real-world contexts of students’ homes and schools, targeting ‘Year Five students.

Outputs
A community information display at Albury City’s Sustainable Living Week

Outcomes
As a result of this research, members of Albury’s low-income households have a better understanding of energy efficiency and awareness of current government assistance.

Shark deterrents and detection: Community perceptions, sentiment and preferences for shark management strategies (2017)

Funding
NSW DPI’s Shark Management Strategy (SMS) Competitive Annual Grants Program, $50,000

Researchers/Investigators
Associate Professor Peter Simmons, Dr Michael Mehmet and Associate Professor Rod Clarke, (University of Wollongong)

Description
This two stage project involved researchers analysing community perceptions publicly available in popular social media sites; and conducting interviews/focus groups with key social and economic stakeholder groups with an interest in the ocean or shark management policy.

Discussions were held on the North coast; Mid-north coast; Central coast; South coast; Sydney Metropolitan and Far south coast.

Their main findings were:
- people preferred to coexist with sharks
- at populated sections of the coast they expect patrols, surveillance, and some protection from sharks
- there was very strong support for trialing and developing technologies, devices and other innovations that are non-lethal to sharks and other marine life
- the shark problem was real but small compared to the fear of sharks which is exacerbated by traditional and social media -clearer communication and education is needed for informed self-protection from sharks, perspectives of risk and about the Shark Management Strategy

Outputs

Simmons, P. & Mehmet, M. (2018) Feeding frenzy: public accuse the media of deliberately fuelling shark fear. The
Conversation


Outcomes

The findings and final report help NSW DPI to consider trends in community sentiment when deciding policy and targeting communication about policy.

Images

1. Dr Helen Masterman-Smith with Colin Young, the winner of the lowest energy consumption prize as part of the Powering Down project.

2. (From Left) Dr Ann Horta, Cr David Thurley, Adjunct Associate Professor Bruce Pennay and Associate Professor Rachel Whitsed for the launch of the Walkability project.

3. Industry consultation for the Women in Regional Trades project.

4. Grave marker of Sundah Singh, an Indian hawker, at the Beechworth cemetery.
OVERVIEW

This theme is the platform for the Institute’s international research projects being undertaken in the developing countries of Laos, Vietnam, Cambodia, Thailand, Myanmar, Bhutan, Pakistan, Timor Leste and the sub-Sahara where, as in other parts of the world, development needs to be sustainable if livelihoods and the environment are to be protected and viable into the future.

Research is aimed at understanding complex social-environmental relationships and influencing outcomes for rural and urban people. A major feature is its high level of impact in community engagement, capacity building and governance. Project topics include and have included community forestry, groundwater and wetland management, agriculture and fisheries, sustainable development and ecotourism. All of the projects are in partnership with in-country collaborators.

While the number of research projects listed under this theme is less than under other themes, most of the projects are large (valued at $500,000 plus) and run over a number of years.

Nearly all projects, bar the two funded by the UK Darwin Initiative Fund and an industry funded project, are funded by ACIAR (Australian Centre for International Agriculture Research). ILWS researchers have an impressive history of successfully completing ACIAR projects and building on their relationships with ACIAR to secure further funding.

Currently there are two major projects where this is the case.

One, the Quantifying improved fisheries productivity at fish passage rehabilitation sites in Lao PDR project, which began in 2016, is examining the biophysical and economic benefits of fish passageways in Laos where the team are working with the Living Aquatic Resources Research Centre, Laos; National University of Laos; and the University of South Australia.

In 2018 the project, led by Dr Lee Baumgartner, received an additional $800,000 from ACIAR and the United States Department of Interior (USAID) to scale out existing work to include four additional countries of the Lower Mekong Basin - Myanmar, Cambodia, Thailand and Vietnam. Part of that additional funding is being used to do extensive GIS work in each country to determine the proportion of tributary streams being blocked by irrigation infrastructure which impacts on fish migration and productivity.

Working in the additional countries has expanded collaborations to additional in-country partners such as the Research Institute for Aquaculture, Vietnam; Inland Fisheries Research and Development Institute, Cambodia; and the Department of Fisheries, University of Yangon, and Department of Irrigation, Myanmar. The team also welcomed a new Australia Award PhD student from Indonesia in 2019.

The other is the Improving groundwater management to enhance agriculture and farming livelihoods in Pakistan project in Pakistan, the second of the Institute’s ground-water projects in Pakistan.

At the core of the project are the capacity building partnerships and collaborations to address the complexity of achieving groundwater management that can more effectively and fairly improve farming family livelihoods. The transdisciplinary project, involving 13 other partner organisations, is part of a suite of Australia-Pakistan water-related research projects.

Partners in this project, which commenced in 2016, are the Pakistan Council of Research in Water Resources (PCRWR); University of Agriculture, Faisalabad (UAF); PMAS Arid Agriculture University Rawalpindi (UAAR); Sindh Agriculture University (SAU); Mehran University of Engineering & Technology (MUT); NED University of Engineering & Technology (NED); Balochistan University of Information Technology, Engineering & Management Sciences (BUITEMS); Punjab Irrigation Department (PID); Sindh Irrigation Department (SID); Balochistan Irrigation & Power Department (BID); International Waterlogging & Salinity Research Institute (IWASRI); and International Center for Agricultural Research in the Dry Areas (ICARDA).

In 2017 ACIAR provided further funding to scope out another project in Pakistan to look at Improving salinity and agricultural water management in the Indus Basin of Pakistan.

A major ACIAR project completed in 2017 was the Farm Power and Conservation Agriculture for Sustainable Intensification (FACASI) project which was implemented in Ethiopia, Kenya, Tanzania and Zimbabwe. Its overall goal, which it went a long way to achieving, was to improve access to mechanization, reducing labour drudgery, and minimizing biomass trade-offs in Eastern and Southern Africa, through accelerated delivery and adoption of Two Wheeled Tractor (2WT)-based technologies by smallholders. This project included the trialing of existing, and building of new seeders and other implements suitable for two wheeled tractors with the aim of increasing service providers’ and smallholders’ income.

The Institute currently has two projects funded by the UK Darwin Initiative. One is looking at the protection of red panda habitat and the livelihoods of yak herders in high altitude rangelands of far eastern Bhutan. Partners include the Bhutan Departments of Livestock; Forests and Parks; World Wildlife Fund Bhutan; the Red Panda Network; and Australian Landcare International. Dr Karma Tenzing, a former ILWS PhD student who graduated in 2016, is employed as a post doc to do the social research component of the project and to liaise with partners.

There have been several “spin offs” from this project including a Savings Scheme introduced in 2017 to the village of Merak; a Red Panda Junior Ranger club launched at Merak Primary School in 2018; the planned installation of a wool processing centre in Merak; and a water piping project for herders at Shytemi.

The other project, which commenced in 2017, is a community reafforestation project in Laclubuar and Soibada, within the Manatuto region of Timor-Leste. This is an integrated research project with environmental, social and educational components. Partners include GroupTraining Northern Territory, World Vision International and Raebia, a local NGO.

An exciting new project under this this is with industry partner, the Xayaburi Power Company Ltd in Laos. The company has teamed with the Institute for a joint research project that will help determine the effectiveness of the fish passages it is installing as part of a multi-billion dollar hydropower plant being built on the Lower Mekong River.
NEW PROJECTS


Sustainable Hydropower and Multipurpose Storage to meet the Water, Food and Energy SDGs. Conallin, J. (2108) IHE Delft 32,000 Euros Project details

The role that Deltas play in sustaining basin-scale fisheries in the Mekong and Irrawaddy Rivers. Baumgartner, L. & Vu, V.A. (PhD student) (2017-2020) IHE Delft. $30,127 Project details

Both Sustainable Development (International) and Biodiversity Conservation themes

Community reforestation for biodiversity and livelihood diversification in Timor-Leste. Millar, J. (2017-2021), UK Darwin Initiative Fund, $528,703 Project details

ON-GOING PROJECTS

Improving groundwater management to enhance agriculture and farming livelihoods in Pakistan. Finlayson, M., Punthakey, J., Allan, C. & Mitchell, M. (2016-2020) ACIAR & CSU $100,000 Total value of the project $2.15M Project details

Quantifying improved fisheries productivity at fish passage rehabilitation sites in Lao PDR. (2016-2020) Baumgartner, L., Ning, N., Horta, A., Conallin, J. with Thonnraft, G. (National University of Laos), Phonekhampheang, O. (National University of Laos), Sihanavoung, D. (Living Aquatic Resources Research Centre), Cooper, B. (UniSA) & Marsden, T. (Australasian Fish Passage Services), Australian Centre for International Agricultural Research (ACIAR) & USAID, $2.6M (initial funding of $1.8M plus an additional $800,000 in 2018) Project details

Both Sustainable Development (International) and Biodiversity Conservation themes


Both Sustainable Development (International) and Environmental Water themes

In search of the elusive Mekong salmon. Baumgartner, L. & Vu. V.A. (PhD student), (2016-2018), National Geographic Society Research Grant, $30,080 Project details

COMPLETED PROJECTS

Farm Power and Conservation Agriculture for Sustainable Intensification (FACASI). Finlayson, M., Blackwell, J. & Krivokapic-Skoko, B. (2013-17) ACIAR, via CIMMY (International Maize and Wheat Improvement Centre), $544,000 Project details


HDR STUDENTS

Current students whose research is aligned with this theme are:

Phenden Gyamtscho: Community based ecotourism. Principal supervisor Associate Professor Rosemary Black

Kim Nelson: Reimagining selves, liminal tourism spaces as sites for lifestyle migration. An exploration of the reflexive narratives of tourism business owners in Niseko, Japan. Principal supervisor Associate Professor Rosemary Black

Samir Thapa: Use of Clean Development Mechanism funding to convert from woodstoves to biogas cookers in western Nepal. Principal supervisor Professor Kevin Parton

An Vi Vu: Diadromous fishes in the Lower Mekong Basin. Principal supervisor Dr Lee Baumgartner

Sangay Wangchuk: Why are villages in the eastern part of Bhutan dying, and what are some of the social and ecological implications of this trend? Principal supervisor Dr Jennifer Bond

Londari Yamarak: Effects of the mining industry on poverty in PNG. Principal supervisor Professor Kevin Parton

RESEARCH ACTIVITIES

As well undertaking externally funded research projects, ILWS members (including Adjuncts) whose research interests are aligned with this theme are engaged in various other research activities/projects. Examples of these include:

- a project which aims to offer smallholder farmers across the Greater Mekong Subregion (GMS) improved capacity to produce and market “clean and green” produce under the Core Agriculture Support Program (CASP)

- a project Urban Growth, Neo Liberal Failures and Water Scarcity in Accra and Atlanta which is investigating water governance regimes in Atlanta (USA) and Accra, (Ghana) two rapidly growing cities—one from the global North and the other from the global South—that share similar histories of neoliberal water governance failure

- a project looking at the costs and benefits of ecotourism in protected areas in Ghana

- an ACIAR funded and Graham Centre administered project (2017-2020) looking at the economic impact of Integrated Pest Management (IPM) on sweet potato production in Papua New Guinea

- a bilateral project between the governments of Myanmar and Norway on Conservation of Biodiversity and Management of Protected Areas in Myanmar. A component of this project included developing a draft set of Guiding Principles for a systematic approach to Ramsar Site identification and prioritisation for designation and a Provisional working list of Myanmar wetlands potentially qualifying as internationally important under the Ramsar Convention on Wetlands

In Focus


Funding

Australian Centre for International Agricultural Research (ACIAR), $544,574 via the
The project was implemented in Ethiopia, Kenya, Tanzania and Zimbabwe and used a range of methodologies including:

- on-station and participatory on-farm evaluation of small farm mechanization such as 2WT (two-wheel tractor)-based technologies;
- business model development;
- institution and policy analysis;
- establishment of a permanent knowledge platform;
- establishment of an international mentoring platform aimed at building research capacity in national research stations and non-government organisations by funding mentoring and training visits from countries such as Australia and India, and exchange visits between Africa and Australia/South Asia.

A common monitoring and evaluation system including gender disaggregated data was developed.

While the researchers encountered many obstacles in the procurement and/or building of seeders suitable for two wheeled tractors, they reported that great progress had and was being made in the quest for the selection of the ‘best bet’ machines under the various conditions experienced in the four countries. Station and farm demonstration trials are continuing with the results being analysed by the countries themselves, with help from the International Wheat and Maize Improvement Centre (CIMMYT) in Nairobi and Ethiopia.

Combining the experiences of all four countries from the agronomic and machinery trials and testing, the same machine stands out in all countries for both row planting of maize, the Fitarelli 2 row seeder and the Morrison, and for the planting of wheat, the Chinese 2BFG drill. These seeders will be used in any future financial or business analysis. Development of the other seeders including the FACASI designed Zimbabwe hybrid has been a bonus to the project.

Further work is being done to develop self-lifting mechanisms and ride on seats for other seeders. In many cases the development of ancillary equipment for attachment to has been seen as important as the seeder approach. Of these, threshing and transport are the most regularly reported to the FACASI teams who are greatly assisting in the design, manufacture, demonstration and promotion of the trailer/thresher/forage cutter concept.

The researchers have recommended that continued testing and trialing of the chosen machines is necessary and innovative improvements to overcome arising problems must be encouraged as should dialogue on all outcomes between the four countries.

**Outputs**

A study trip to Australia in 2015 for eight visitors from four African countries (Zimbabwe, Kenya, Tanzania and Ethiopia) hosted by the National Centre for Engineering in Agriculture (NCEA), University of Southern Queensland.

The development of a FACASI designed Zimbabwe hybrid 2WT.

A review by Professor John Blackwell of the FACASI project will be undertaken in 2019.

**Outcomes**

Progress is being made on adoption of small farm mechanization in sub-Sahara Africa, with take-up of the technology varying from country to country with the second phase of the FACASI project (not involving ILWS researchers) now being implemented.

In Ethiopia, from the purchase of only 2 two-wheel tractors from ACIAR funds, the country now has 59 service providers operating on a commercial basis, all with a minimum till seed drill. In addition to those, the Ministry of Agriculture and Natural Resources is supporting 76 youth groups with two-wheel tractors and ancillary equipment, and the FACASI team is in charge of the training of all these groups, on both technical and business aspects. A private company now imports the seed drill commercially. In 2017, a public sector importer sold 200 two-wheel tractors (not as part of the 59 + 76 mentioned above). The Chinese 2BFG drill is becoming popular in wheat, barley and teff areas. Using this drill for these crops leads to a yield increase in almost 100% of the cases (because of row seeding, precise placement of fertilizer, etc).

In Zimbabwe, progress is considered substantial. Last year, 15 farmers from one of the demonstration sites used their own resources to purchase two-wheel tractors and Fitarelli two-row seeders. Zimplow (the largest manufacturer and distributor of farming implements in sub-Saharan Africa) have modified their conventional animal drawn planter and are manufacturing a planter suitable for two-wheel tractors.
Another manufacturer, Grownet, also has a planter commercially available as a result of FACASI intervention, and has sold 15 units last year in the east of the country. The FASCI team is working on a modification which will multiplying the field capacity of the machine (and thus reducing the time needed to plant a field).

In Kenya while uptake of the two-wheel tractor was regarded as disappointing with local partners focussing on four-wheel tractors, gains are being made in terms of Conservation Agriculture. In Tanzania uptake of small farm mechanization was also minimal.

Images

1. Visit to the Renala Power Station in Punjab province, Pakistan.
2. Jorge Ramos teaching field staff for the community reforestation project in Timor-Leste
3. PhD student Vu Vi An travelled the length of the Mekong River for his project
4. Launch of the red panda project in the village of Merak, Bhutan
5. A multi billion dollar hydro-power plant is being built on the Lower Mekong, Laos.
COMMUNITY ENGAGEMENT

Most of the Institute’s community engagement activities are done at the regional level where members interact directly with regional communities in a number of ways. A popular means of interaction are talks, presentations or workshops given by members on their areas of expertise or on current research to the general public, specific interest groups, schools and other tertiary institutions.

For example, in 2017 and 2018:

Institute Adjunct Professor Kathleen Bowmer presented a series of eight sessions (January to April 2017) on “Critical issues in water” for the University of the Third Age in Wagga Wagga.

In April 2017 Dr Lee Baumgartner and Matt Barwick from the Fisheries Research and Development Corporation presented at a community forum in Albury on the proposed carp virus release. The event was organised by the South West Anglers Association and attended by 120 people. Dr Baumgartner gave another talk on the carp virus to the Upper Murray Landcare Group in Corryong, October 26, 2017.

Professor Linda Shields, a nurse researcher, was the guest lecturer at the inaugural Nell Ricordan lecture series held at Southern Cross University, Lismore, NSW, Sept 8, 2017.

Institute Adjunct Richard Loye gave a talk on “Birds, people, despots and conservation: windows on the world” to the Warby Ranges Landcare group at Hamilton Park, October 20, 2017, and another, to the Friends of the Royal Botanic Gardens, in Cranbourne on October 29, 2017 on “Birds and why they matter: windows on the world.” He also led a “Birds and gardens” event for the Stanley Landcare group on October 16, 2018, and gave a presentation on despotic birds and their effects on the ecosystem structure in flood-prone Black Box woodlands, to the Swamps, Rivers & Ranges local NRM group in Wangaratta, Oct 16.

Dr Jonathon Howard, together with Dr Tim Clune from La Trobe University’s Business School, organised and facilitated a community workshop - Celebrating Our Region’s Contribution to the UN Sustainable Development Goals- in Wodonga on November 29, 2017, to raise awareness of and to celebrate the Border Region’s current contribution to the delivery of the United Nations Sustainable Development Goals.

Dr Alexandra Knight gave a talk at the Whitehead Street Wetland Open Day, Corowa, December 4, 2017, as part of the launch of the Corowa District Landcare Group’s Sounding the Chorus for Frogs in Corowa’s Wetlands project. Dr Knight also participated in a Frogs ‘n Fish Workshop for a Corowa District Landcare’s Junior Landcare program in Corowa, August 16-17, 2018; ran a Frog ID and Arboreal Mammals dusk walk and talk, Sept 27, 2018, hosted by the Beechworth Urban Landcare and Sustainability Group; and ran a community frog event, Mitta Mitta, October 27, 2018.

Luke Pearce, from NSW DPI Fisheries, and Dr Luiz Silva ran an information evening to inform the local community on the results of a research project looking at Macquarie Perch numbers in the Mannus Creek in the Upper Murray at Tooma, December 7, 2017.

The evening was presented by ILWS PhD student Liz Znidersic did a presentation/ field day on “The secretive birds at Big Waterhouse Lake” based on her research to the North-East Tasmanian Field Naturalists Club Inc. on December 9, 2017. Liz also had a morning at St Helens Primary School talking about birds in early December.

Dr Travis Holland presented a talk on ‘The Politics and Promise of the NBN; the first in a series of eight talks for Bathurst University of Third Age (BUSA)’s Monday Morning Show, on Monday, February 5, 2018.

Dr Jessie Lymn gave a talk “HALF + HALF” at the “Halfway Print Fest (HPF), a celebration of independent publishing, at the Museum of the Riverina in Wagga Wagga, March 3, 2018.

Associate Professor Maree Bernoth presented an education session to the Clinical Nurse Consultants and Clinical Midwifery Consultants from the Murrumbidgee Local Health District to encourage them to engage with research on April 14, 2018 with another presentation in June, 2018.

Dr James Van Dyke gave a talk on “Reducing the Impacts of Foxes on Turtles at Winton Wetlands” at a “Sticking our necks out for turtle conservation” community engagement event at Winton Wetlands on April 14, 2018. The event was organised by the Friends of Winton Wetlands community group. He, together with Professor Rick Spencer from Western Sydney University, also gave a public seminar on turtle conservation at Wonga Wetlands, near Albury on May 11 to an audience of about 30.

Professor David Watson was a special guest speaker at a Trust for Nature’s “Mistletoe-friend or foe” field day, Grayton, May 19, 2018 funded by the Goulburn Broken Catchment Management Authority through the National Landcare program.

As part of a City of Melbourne’s Urban Forest and Ecology Team promotion encouraging people in the city to appreciate nature in the city, Professor David Watson spoke on mistletoe at a public event held at the Donkey Wheel House in Bourke Street, Melbourne, on July 16, 2018.

Dr Geoff Heard took part in revegetation efforts (planting native grasses to provide cover for a small population of the vulnerable Sloane’s froglet) with about 10 helpers participating in the School Leaver Employment Support package (administered by Job Centre Australia with funding from the NDIS Finding & Keeping a Job program) at CSU’s Albury-Wodonga campus on August 7, 2018.

Dr Kath McFarlane presented a public lecture on “Nagle to Now 40 Years of Prison Reform and Rehabilitation” on Thursday, August 23, 2018, at CSU Bathurst.

As part of fundraising for the 2019 Bathurst Writers’ and Readers’ Festival, Associate Professor Alison Gerard was in-conversation with Australian author and broadcaster Clementine Ford at a fundraising evening at the Bathurst Memorial Centre, October 2, 2018.

Dr Alexandra Knight and Dr Rachel Whitsed ran two public workshops, teaching people how to find, identify and record plants and animals. The workshops were: Field Observations – the How of observing and recording nature, Oct 6, 2018, Ryans Lagoon, Bonegilla, and Mapping change over time - October 14, 2018, CSU Albury-Wodonga campus.

Institute Adjunct Professor Bruce Penney gave a talk on the stories of the migrants that came through the camp as part of the activities for the Bonegilla Migrant Camp reunion, November 2-3.
Institute members engage with a wide range of external stakeholders at the regional, national and international levels. Its external stakeholders include Federally funded research agencies, departments & agencies; State Government departments & agencies; international organisations, NGOs, government departments, agencies and tertiary organisations; industry; Catchment Management Authorities (CMAs) and Local Land Services (LLS); Federal and State MPs; Australian NGOs and lobby groups; editorial boards and editors of academic journals; the general public; community groups and networks; local shires and councils; local businesses; national tertiary institutions & research organisations; statutory bodies and associations; and the media. Engagement activities include media coverage; social media activity; public lectures, presentations, workshops, seminars; Open Days; school visits; consultations with community groups, professional/practice organisations and government bodies; serving on external advisory boards; contributing to government inquiries and reviews; Institute organised events; prizes, awards and other distinctions; and interactions with visitors to the Institute. In the following pages we highlight some of our members’ engagement activities. A more complete list for 2017 and 2018 is accessible from our web pages at [https://www.csu.edu.au/research/lsws/engagement](https://www.csu.edu.au/research/lsws/engagement).

CenWest Innovate

CenWest Innovate is a collaboration between CSU and the NSW Department of Industry which aims to support the development of entrepreneurship, innovation and small business management capacity in Central West NSW. Professor Mark Morrison is its director. It hosted a variety of activities in 2017 and 2018 which included:

- ‘Starting a Business’ boot camp, March 24 and 25, 2017 Bathurst; with another Business boot camp in Bathurst, May 4 to 5, 2018
- Developing Regional Entrepreneurial Ecosystems forum, at Bathurst, April 28, 2017. Speakers included University of Canterbury’s Professor Morgan Miles, Troy Haines from the Space, Professor Mark Morrison and Professor John Hicks
- Digital Marketing Masterclass: Move your business forward, at Bathurst, May 4, 2017. Speakers were Dr Paul Harrigan UWA, Dr Michael Mehmet, and Peter Sutton Kai Ming Consulting
- Branding and Target Marketing for Business Success seminar - Bathurst, Orange in July, 2017
- Pricing Your Products Masterclass - Parkes, Orange, Bathurst in September, 2017
- Cyber Security for Small to Medium Sized Enterprises – Dubbo, Orange, Bathurst in November, 2017
- a six month Next Stage Growth Program, July to Dec., 2017 with a second program in 2018
- hosting a visit by Professor Peter Kelly from Aalto University, Finland, who gave two talks on “How do successful entrepreneurs operate?” and “The Design of Entrepreneurship Education” at CSU Bathurst, June 28, 2018
- Next Stage Growth Program presentation to Bathurst’s Inspiring Women, August 17, 2018
- Recruitment Masterclass: Modern practices to secure your business future, presented by Dr Stacey Jenkins (CSU) and Tamara James (Pulse HR) at Young and Cowra, August 29, and Orange, August 30, 2018
- Public Relations Stakeholder Analysis Masterclass, Sept 6, 2018, Bathurst.
- Winning Negotiations Masterclass, in Lithgow, Bathurst, October 10; Parkes, Dubbo, October 11,2018
- Next Stage Growth Program presentation for The Power of Connection – Celebrating Small Business Month, Blayney Council Business Networking forum, October 16, 2018
- Next Stage Growth Program expo for Forbes Council Celebrating Small Business Month - Business Networking, October 16, 2018

STAKEHOLDER ENGAGEMENT

Our members engage with the Institute’s stakeholders as a way of building partnerships, sourcing funding for research projects, networking, determining market needs, identifying issues that they can assist with, and feeding back research findings.

Some of the ways in which they do this is by meeting with stakeholders, attending meetings and workshops where they can contribute their knowledge and expertise, being on advisory panels or boards, or presenting at forums, seminars and conferences. For example:

Dr Julia Howitt gave a presentation to the Murray and Lower Darling Environmental Water Advisory Group on February 7, 2017 in Denlinquin which focussed on the algal bloom and hypoxic blackwater events that occurred in the system in 2016.

Professor Robyn Watts and Dr Julia Howitt gave a presentation on the Koorndrook-Perricoota Floodplain Runoff project with a focus on carbon, blackwater and hypoxia, at a symposium on February 8, 2017, at Moama, NSW, as part of the ‘Connecting the dots at Koorndrook-Perricoota Forest’ 2017 Gathering.

Three members of the Edward-Wakool LITM team, Dr Julia Howitt, Dr Nicole McCasker and Institute Adjunct Dr Jason Thiem, gave presentations on water quality issues, fish populations, and fish movement at the annual Edward-Wakool Fish Forum held at the Barham and District Services Club, Barham on the evening of February 16, 2017. Around 80 people attended the forum which was a collaboration of Murray LLS, NSW DPI Fisheries, CSU and the National Landcare Program.

Dr Rachel Whitsed gave a talk on the Better Parks for People project at the Developing age-friendly rural communities: sharing international and localo learnings forum at LaTrobe University, February 14, 2017.

Professor David Watson was part of the “The Wings on King Seminar and launch – a celebration of the birds on King Island and why we need them” event, April 27-30, 2017, King Island. He gave a presentation on “Boosting biodiversity AND the bottom-line—achieving win-win outcomes with conservation farming: The benefits of managing both simultaneously” and led a workshop on “Detraging King Island: How to maintain/increase biodiversity and improve land management while sustaining a strong agricultural industry”.

In May 2017, Dr Lee Baumgartner participated in a sustainable diversion limit project design workshop with the North Central CMA.

Dr Alexandra Knight, Dr Mariagrazia Bellio, Dr James Dan Dyke, PhD student Daniel Szozl, Dr Ana Horta and Margrit Beemster took part in a “New Horizons – exploring linkages and opportunities between health and the environment in North East Victoria” workshop organised by the North East Catchment Management Authority in Wodonga, Victoria, on July 6, 2017. The workshop explored ways that the regional health sector could collaborate and partner with organisations involved in managing the North East region’s natural resources. A second workshop, to expand on and flesh out specific opportunities and priorities identified in the July workshop, was held on December 7, 2017 in Beechworth. Attendees included representatives from both the health and the NRM sector including private landholders, ILWS, Department of Environment, Land, Water & Planning.

Institute Adjunct Associate Professor Ian Gray attended a meeting of regional rail user groups in Goulburn on July 19, 2017 which discussed how they could work together to further improve passenger train services in NSW.

Associate Professor Rosemary Black is collaborating with the Mid North Coast Local Health District (MNCLHD) on a number of fronts.
Since August 2016, she has been coordinating monthly research seminars at the Port Macquarie campus attended by both CSU staff and other regional researchers, practitioners and postgraduate students, including MNCLHD staff. She is also a member of a team of researchers based at MNCLHD assessing research applications. She was invited to present a workshop on Mixed Methods Research, October 4, 2017. Workshop participants included practitioners in occupational health, dietetics and medical imaging.

On July 27, 2017, Dr Lee Baumgartner, Dr Nathan Ning and Annette Davies, CSU's Research Partnership Manager, went to Mullumbimby in northern NSW to tour the Mullumbimby community-owned renewable energy project which aims to reinitiate the Mullumbimby Hydropower Plant and to discuss fish issues associated with that.

Professor Max Finlayson is chair of the Winton Wetlands Environmental Strategy Advisory Panel and attends regular planning meetings which include planning annual forums. The aims of the forums are to provide support for research on the Winton Wetlands restoration program; assist in gaining data for the management and progression of the site; and help progress the science of wetland restoration in Australia and elsewhere. Professor Finlayson spoke at a special session at the third annual Winton Wetlands Restoration Science Forum, August 17-18, 2017, on the potential listing of the Winton Wetlands as an internationally-recognised wetland. He also attended the 4th annual Winton Wetlands Science Forum ‘Risks and Drivers of Change in Wetland Management’, August 16 - 17, 2018 and summarised the forum at the end.

In his role as an Independent Scientist with the Lake Cowal Foundation, Professor Max Finlayson continued to attend regular meetings of the foundation in 2017 and 2018 as well community consultative and engagement committee meetings.

Associate Professor Dirk Spennemann was one of the speakers at the International Earth Building Conference, held at CSU's Albury-Wodonga campus, Thurgonan, Nov 2 to 6, 2017.

During 2017 and 2018, ILWS members, (Associate Professor Peter Spooner, Professor David Watson and Associate Professor Catherine Allan) continued to provide valuable input to Slopes to Summit (S2S) partnership, something they have done since its inception in 2007. S2S is an important part of the Great Eastern Ranges initiative which aims to restore and connect the landscape and communities along the Great Dividing Range and Great Escarpment of eastern Australia. The current focus of S2S is to continue to develop opportunities for on-ground evidence-informed connectivity conservation actions. With members including OEH, Landcare, LLS and Parks Albury Wodonga, the group provides an important natural resource management forum for exchanging ideas and developing projects across the South-west slopes and Riverina regions. In January 2018, Dr Alexandra Knight was appointed Chair of the Slopes to Summit (S2S) partnership.

As a member of the Sydney Olympic Park Authority’s WET (Wetland Education and Training) Technical Advisory Panel, Professor Max Finlayson together with Institute Adjunct Dr Swapan Paul help plan its wetland courses.

Community meetings were held at the Jindera Community Hub and the Federation Council Chambers at Corowa on May 15, 2018 where the results of a joint study on the economic health of the Murray region were presented.

Professor David Watson gave a keynote presentation on “The secret life of mistletoe: Advances in understanding their ecological role and ecosystem function” at the Conservation in Action Conference: Research to Reality, held in Bathurst, May 16 to 17. The conference was organised as a partnership between Central Tablelands Local Land Services, Central Tablelands Landcare and Central West Council’s Environment & Waterway Alliance.

On June 1, 2018 Dr Lee Baumgartner and Jarrod McPherson visited farmer Paul Trevethan’s property “Tara” at Howlong to learn more about “best practice plumbing in sheds” as part of the background research for the new shed that is being built as part of their Snowy 2.0 project.

Dr Lee Baumgartner, a board member of the North East Catchment Management Authority, attended a meeting with the CMA on June 20, 2018 to help identify key indicators of catchment health that could be fed into the CMAs new corporate plan. He also attended a board meeting on September 18, 2018.

Associate Professor Maree Bernoth was co-convenor of the Australasian Association of Gerontology Regional Symposium, held in Wagga, August 8 to 10, 2018. The symposium attracted 111 delegates from across NSW, Victoria and the ACT including a large contingent from Catholic Healthcare.

On August 14, 2018 Professor Max Finlayson attended a workshop at WBT Consulting Group in Brisbane which looked at closure criteria for the Ranger Uranium Mine in the Northern Territory.

On August 20, 2018, Professor Max Finlayson met with the CEO of the Murray Darling Association (MDA), Emma Bradbury, at CSU’s Albury-Wodonga campus to discuss collaboration between MDA, ILWS and SEGRA.

On August 21, 2018, Dr Lee Baumgartner and Professor Max Finlayson met with Professor Nick Bond, Director of the new Centre for Freshwater Ecosystems, LaTrobe University (formerly the Murray Darling Freshwater Research Centre) where they had a discussion about strategic research opportunities and agreed to follow up on areas of mutual interest.

Dr Rachel Whitsed, Dr Alexander Knight and Associate Professor Rosemary Black have been initiating a project with Yarra Ranges Council to assess and model playspace usage, based on the methodology of their Better Parks for People project.

As members of the North East Catchment Management Authority’s Science Panel, Professor Max Finlayson and Associate Professor Catherine Allan attended a meeting of the panel in Wodonga, August 10, 2018.

Dr Helen Masterman-Smith spoke on the nature and causes of the housing affordability crisis in Australia at the Sustainability Activity Centre, Wodonga, September 27, 2018. The event was organised by Tiny Houses Albury-Wodonga.

Professor Robyn Watts and Institute Adjunct Dr Geoff Viets spoke at the Wise Water Ways workshop, held in Beechworth, North East Victoria, October 29 to November 2, 2018. The workshop was presented by the North East CMA, Department of Land, Water & Planning, Jacobs, Centre for Freshwater Ecology-La Trobe University, River Basin Management Society. Professor
Watts spoke on on water resource allocation, environmental flows importance and assessment methodology, and streamflow management; Dr Vietz on geomorphic principles for working with waterways, and practical applications of geomorphic knowledge, as well as on stream hydraulics and sediment movement in another session.

Indigenous engagement

Professor Max Finlayson attended a meeting in Kerang, Victoria, October 4, 2017, to discuss potential projects on indigenous values of lakes and rivers. The meeting, with local indigenous people, was facilitated by Mike Nurse from the Federation of Victorian Traditional Owner Corporation.

EVENTS

During 2017 and 2018 the Institute has been directly involved in the organisation and sponsoring of regional events with regional partners. These include:

North East Regional Water Forum

The North East Regional Water Forum was held on March 21, 2018 to coincide with World Water Day, March 22. The event, held at the North East Water auditorium in Wodonga, attracted agency staff, landholders and academics. ILWS was one of the event organisers along with North East Water, North East CMA, Murray Darling Basin Authority, Goulburn Murray Water and La Trobe University. In attendance was Dr Jennifer Bond and Professor Max Finlayson.

North East CMA events

For the second year in a row, the Institute teamed with partners – North East CMA, Trust for Nature, Department of Environment, Land, Water and Planning, and Parks Victoria – to present the annual North East Environment Forum held May 25, 2017 at CSU’s Wangaratta study centre. The forum’s theme was “Connecting People with Nature” and was attended by 76 people. Professor Max Finlayson was the MC.

One outcome was a workshop organised by the North East CMA on “New Horizons: exploring linkages and opportunities between health and the environment in North East Victoria” held July 30, 2017 in Wodonga which saw 30 people from the two sectors come together including six Institute members - ecologists Dr Alexandra Knight, Dr Mariagrazia Bellio, Dr James Van Dyke, PhD student Daniel Svozil, spacial scientist Dr Ana Horta, and communications coordinator Margrit Beemster.

A further workshop which built on the outcomes of the first one was held in Beechworth, December 7, 2017. It was attended by 23 people representing the health and NRM sectors including private landholders, ILWS, the Department of Environment, Land, Water & Planning.

The Institute also held a brainstorming session to further develop partnerships and explore potential collaborative projects with the North East CMA. Sixteen ILWS researchers and five North East CMA staff attended the session held at the Albury-Wodonga campus on June 5, 2018. Outcomes included assisting the CMA with analysing soil test data; and developing deer management projects. As a follow-up Professor Max Finlayson then met with the CMA’s new CEO, Katie Warner, together with the head of the Albury campus, Dr Jenni Munday and Dr Wes Ward, on September 6, 2018, to discuss increasing collaboration between CSU, ILWS and North East CMA.

AWARDS

Our members continue to be recognised for their contributions to their fields of expertise and the community. For example:

On June 8, 2018 Adjunct Dr Swapan Paul received a City of Parramatta Sustainability Award - Environmental Citizen 2018 - for organising Clean-up Australia Day events annually over the past 20 years.

Images

1. Professor David Watson engages in many community engagement activities.

2. Participants in the North East Environment Forum at the CSU’s Wangaratta study centre. Pic: S. Dallinger
Images


2. Dr Alexandra Knight at one of her many community engagement activities.

3. Institute researchers and staff from the North East CMA met for a brainstorming session at Thurgoona.

4. Participants in a “New Horizons-exploring linkages and opportunities between health and the environment in North East Victoria” workshop in Wodonga.

5. Dr Lee Baumgartner, Dr Nathan Ning and Annette Davies, CSU’s Research Partnership Manager, went to Mullumbimby in northern NSW to tour the old Mullumbimby Hydropower Plant for a proposed community energy project.
ENGAGEMENT: NATIONAL

STAKEHOLDER ENGAGEMENT

At the national level, our members engage with the Institute’s stakeholders to build partnerships, establish relationships that can lead to securing funding for research projects, to determine government, industry and market needs, to feed back research findings and results, and to provide advice in their area of expertise.

Ways in which they do this include being on advisory and technical reference groups, attending meetings and networking activities, meeting with Government ministers, departmental staff, current and potential project partners, and presenting at forums, seminars and conferences. Some examples include:

Dr Lee Baumgartner attended the "Doing well by doing good – Queensland’s Impacts & Benefits in Agricultural Research*, a Crawford Fund Queensland Forum and Networking Reception, at Queensland’s Parliament House, February 14, 2017

In June, 2017 Professor Max Finlayson had a meeting in Canberra with the former Australian Governor General Major General The Hon. Michael Jeffery and Ashley Bland, from SkillSet in Bathurst, and others to develop a national level Sustainability Indicator.

Dr Lee Baumgartner attended a project planning meeting on fish protection in irrigation systems in September, 2017, in Canberra with representatives from the Department of Primary Industries, Arthur Rylah Institute, the South Australian Research and Development Institute (SARDI) Aquatic Sciences, NSW Agriculture and Tenure Chasers.

Dr Luis Silva attended the National Carp Control Program’s Science Advisory group workshop in Canberra in July, 2017.

Dr Alexandra Knight is a member of the Technical Reference Group which has provided specialist input in 2017 to the Victorian Government’s “Protection of Alpine National Park – Feral Horse Strategic Action Plan”.

Associate Professor Branka Krivokapic-Skoko gave a presentation on ‘From ‘attraction points’ towards retention: What do we know about international immigrants who come to stay in non-metropolitan Australia’ at a Rural and Regional Mobilities Workshop; Exploring the Impact of (Im)mobilities in Rural and Regional Communities, organised by the University of South Australia - Mount Gambier Campus, on September 26, 2017.

Professor Max Finlayson and Dr Lee Baumgartner attended the launch of the ACIAR 10 year research strategy at ANU in Canberra, December 11-12, 2017.

In December, 2017, Associate Professor Maree Bertho was invited to take part in the Federal Government’s Aged Care Workforce Strategy Taskforce, which has been put together by the Minister for Ageing, Ken Wyatt. She spoke first to a peak industry body, Leading Age Solutions Australia Ltd, in Sydney to aged care providers about the evidence researchers have about staffing for ageing. She was then invited by the head of the ageing task force Professor John Pollaers to a summit in Melbourne. In October 2018, Associate Professor Bertho, at the request of the Senate Standing Committee on Community Affairs, Legislation Committee, provided a report to the Inquiry into the Aged Care Quality and Safety Commission Bill.


Dr Julia Howitt attended and gave a presentation at a two day workshop, organised by CSIRO on the hypoxic blackwater risk in the Murray-Darling Basin and the processes leading to hypoxic blackwater events, their impacts and management options, Jan 30 and 31, 2018.

On World Wetlands Day, February 2, 2018, Professor Max Finlayson, gave a keynote presentation, by video to the 2018 WA Wetland Management Conference, held at the Cockburn Wetlands Education Centre, WA. His presentation was on “Policy failure or success in managing wetlands under climate change?”

Dr Lee Baumgartner attended the ACIAR fisheries project leaders’ meeting in Brisbane, February 18 and 19, 2018 where project leaders were briefed on ACIAR’s new 10 year plan.

In his role as a member of the NSW Environment Trust’s Aquatic sub-committee, Dr Lee Baumgartner attended the committee’s inaugural meeting on Feb 26, 2018, in Sydney.

Dr Kath McFarlane’s research into the involvement of children in out-of-home care in the NSW criminal justice system was cited by the Australian Law Reform Commission in 2018 to support a recommendation for a national child protection - child welfare inquiry.

Dr Rachel Whitsed gave a presentation under the theme of mapping, measuring and clarifying rural health metrics, at the 6th Rural and Remote Health Scientific Symposium, held April 11 and 12, 2018, in Canberra. The symposium was run by the National Rural Health Alliance.

Professor Robyn Watts was a member of an invited panel of experts that spoke at a public hearing of the House of Representatives Standing Committee on the Environment and Energy’s inquiry into the management and use of Commonwealth environmental water in Albury, April 30.

Dr James Van Dyke gave a seminar on applying reproductive biology to the conservation of declining animal species at Flinders University, South Australia on May 11, 2018.


On June 26 and 27, 2018 Dr Lee Baumgartner, Jarrod McPherson, Dr Nathan Ning, Dr Luiz Silva, Cameron McGregor and Institute Adjunct Dr Craig Boys (NSW DPI) went to Talbingo to participate in a Snowy Hydro project induction in preparation for their research for the Snowy 2.0 project. Dr Lee Baumgartner also had a design meeting with Pure Aquatics, who are supplying equipment for the new laboratory for the Snowy 2.0 project in Port Macquarie in July.

Institute Adjunct Dr Justin Watson attended a Torres Strait Terrestrial Island Ecosystems Workshop in Cairns, June 26 to 27, 2018.
The aim of the workshop was to better understand the importance of the islands’ vegetation, fauna, wetlands and mangroves; and to identify the key threats to ecosystems and species.

Dr Joanne Millar and Jennifer Bond attended the Asian Studies Association of Australia conference in Sydney, July 3 to 5, 2018, University of Sydney where Dr Millar presented a paper on her Darwin Initiative project in Timor Leste; and Dr Bond her research results from previous work in Vietnam on rice policy and climate adaptation. The two have joined the Timor Leste Studies Association.

On July 4, 2018 Professor Max Finlayson, Associate Professor Catherine Allan and Dr Michael Mitchell took part in an ACIAR Impact Pathways in Monitoring and Evaluation discussion with Ted Rowley, a consultant to ACIAR, held at the Albury-Wodonga campus.

Two ILWS members were involved in the Cyber Security Symposium 2018, held July 5 to 8, held at the International Hotel, Wagga Wagga. The symposium covered the latest development in cyber security. They were Professor Mark Morrison who spoke about the Faculty’s Research, and Professor Stephen D ‘Alessandro, Cybersecurity CRC – Theme Leader who spoke on ‘Privacy preserving data sharing in a hyper connected world Cyber’.

On July 12, 2018 Professor Max Finlayson, together with Associate Professor Dr Skye Wassens, Dr Keller Kopf, Dr Paul Humphries and Dr Lui Silva, attended a workshop on the ‘Medium to long term effects of carp reductions’ at the North East Catchment Management Authority’s offices in Wodonga. The workshop, hosted by North East CMA, was run by the National Carp Control Plan.

On July 16, 2018 Dr Lee Baumgartner went to Goondiwindi to meet with a potential project partner who owns a research farm. The farm has the potential to be used as a test site for a possible ARC project.

From July 20 to 27, 2018, Professor Max Finlayson was in the Northern Territory to attend the 40th anniversary of the Environmental Research Institute of the Supervising Scientist in Darwin. He gave a presentation on reframing the concepts that led to the establishment of Kakadu National Park and uranium mining in a modern socio-ecological context.

As part of Dr Alexandra Knight’s 2017 Early Career Seed Grant, Alex has been involved in a collaborative research program into research impact, knowledge exchange and co-production together with researchers from ANU, CSIRO, Monash, Oxford and Auckland University of Technology. Co-funded by ANU’s Fenner School the group gathered in Canberra for four days in August, 2018, together with 31 invited guests (including NGOs, research and government agencies, and consultancies) with facilitation provided by an international expert on impact research Mark Read, Professor of Socio-Technical Innovation at Newcastle University, UK, along with other invited international experts. The group commenced development of a professional network of knowledge exchange researchers and practitioners, as well as research into processes and evaluation of knowledge exchange, and post-colonial perspectives. One outcome of this collaboration was a public lecture on “When Science Changes Society: When and How Research has Impact” presented at ANU, August 8, 2018. The event was supported by the Fenner School of Environment and Society and the Faculty of Science, Charles Sturt University.

On August 22, 2018 Dr Lee Baumgartner and Dr Nathan Ning held a workshop to develop an economic cost benefit tool at CSU Albury-Wodonga with Professor Lin Crase and Dr Bethany Cooper, economists from the University of South Australia, and partners in the Fish Passage project in Laos.

Dr Lee Baumgartner went to Canberra, August 29, 2018 for a meeting with ACIAR’s Research Program Manager Ann Fleming, and Geoff O’Keefe, 2IC of ACIAR’s new Capacity Building branch, to discuss how to better align ILWS research efforts and institutional capacity building into its ACIAR projects.

Dr Katie Doyle and Dr Lee Baumgartner met with representatives from the South Australian Research and Development Institute (SARDI). Arthur Rylah Institute, and NSW DPI in Melbourne, September 6, 2018 to give a preliminary project update for the Fishing for Answers project and to map out their approach to Basin-scale analysis of fish recruitment.

Dr Lee Baumgartner and ACIAR’s Chief Scientist, Dr Daniel Walker, had a meeting with Department of Foreign Affairs and Trade’s Director of Innovation Exchange Sarah Pearson on September 24, 2018 in Canberra. The meeting was to discuss how to better integrate DFAT’s development activities into ACIAR research projects to help bridge the gap between development outcomes and strategic research.

Institute Adjunct Dr Mary Rosengreen chaired a session on “Visualisation” at the SPECTRA 2018 symposium and festival held in Adelaide, Oct 10-12, 2018. The theme of the symposium was research collaboration between artists and scientists. The symposium was presented by the Australian Network for Art and Technology, University of South Australia and Experimenta Media Arts.

Professor Manohar Pawar attended a public lecture on A New Age of Sustainable Development – Australia, Asia, and the World, delivered by Professor Jeffrey Sachs and organised by the The Monash Sustainable Development Institute, on Oct. 15, 2018.

Associate Professor Russell Roberts was the chair of the Australian Rural & Remote Mental Health Symposium 2018 held in Hobart, Tasmania, October 15 to 17, 2018 where he gave a presentation on “Rural mental health workforce, a policy imperative: Yes or No?”; and chaired a session on ‘Let’s discuss stigma’. He also did considerable media around the event including the launch of the revised Equally Well web-page.

Associate Professor Maree Bernoth was an invited speaker at the NSW Nursing Association Aged Care Nurses’ Forum, Quality Matters, in Sydney, October 24, 2018 where she spoke on nutrition and hydration as indicators of quality care.

Conference Papers

Additionally our members present papers and posters at the various national academic conferences they attend. In 2017 and 2018 these included the Australian Mangrove and Saltmarsh Network Conference; 2017 NSW Rural Health and Research Congress; 2017 Australian Regional Development Conference; Australian Conference on Science and Mathematics Education; Australian Campuses Towards Sustainability Conference; 27th National VET (Vocational Education and Training) Research Conference; Asian Studies Association of Australia conference; Feral Horse Impacts: The Kosciuszko Science Conference; and the
Australian Sociological Association (TASA) Conference.

EVENTS

During 2017 and 2018 the Institute has been directly involved in the planning of, and in some cases organisation of and sponsoring of national events. These included:

NAPREC events

One partner that the Institute has been involved with since its inception in 2017 is the National Agricultural Productivity and Reconciliation Ecology Centre (NAPREC), a community-driven research and education initiative for the Murray Valley, based in Deniliquin, NSW. The involvement commenced with a pre-conference planning meeting with NAPREC representatives at the Albury-Wodonga campus in March 2017 attended by Professor Max Finlayson, Dr Lee Baumgartner and Dr Jennifer Bond.

The inaugural NAPREC conference was held in Deniliquin, October 4 & 5, 2017. The theme of the conference was “Positive Partnerships for Pathways to Sustainable Agriculture and Biodiversity”. The conference introduced the concept of ‘reconciliation ecology’ and highlighted the value of the human side of natural resource management (NRM). The conference attracted farmers, researchers (nine members from ILWS), industry and government representatives.

A NAPREC progress meeting was then held in Deniliquin on December 19, 2017. Five ILWS members met with NAPREC leaders and interested stakeholders in Deniliquin to discuss how the centre can best forward sustainable agricultural production in southern Australia. The morning workshop was followed by an afternoon field trip and discussions around the Frogs in Rice project funded by Rice Growers Australia.

In 2018, a NAPREC planning workshop was held in Deniliquin, June 26-28. Professor Max Finlayson was joined by Dr Jen Bond, PhD student Mike Vanderzee and Dr Wes Ward and a group of local landholders. The purpose of the workshop was to commence compiling a collaborative concept paper on NAPREC and the concept of reconciliation ecology, its significance, and the role it can play in the Murray Valley. A second NAPREC writing workshop was held at Mulwala on October 9-10, 2018. The paper is being co-authored by ILWS members Professor Max Finlayson, Dr Wes Ward, Dr Jen Bond, Dr John Conalin, Dr Michael Mitchell, PhD student Michael Vanderzee and representatives from NAPREC, Adam Wettenthal, Shelley Scoollar and Louise Burge. In addition, NAPREC is seeking funding for a pilot project - Winter Wetland Refuge project - with ILWS helping provide academic and scientific resources. The project will connect communities, landholders, education and science in the Murray Valley.

SEGRA

Institute members continued to be involved in the annual SEGRA (Sustainable Economic Growth for Regional Australia) conferences. Professor Max Finlayson, Professor Mark Morrison and Institute Adjunct Professor Peter Waterman attended the 21st annual SEGRA conference in Port August, SA, October 23-27, 2017 where Professor Finlayson facilitated a Group Focus Session on getting science and evidence back into policy and decision making; chaired a workshop session on sustaining coastal regions; was a panel member of a discussion on National Conservation for Regional Policy; presented a challenge topic on regional Australians informing strategies for education to employment; and together with Professor Peter Waterman further developed the Safe and Secure Domestic Water project. Professor Morrison gave a presentation on CenWest Innovate.

The 22nd annual SEGRA conference was held in Mackay, Queensland, October 22-25, 2018. At the conference Professor Mark Morrison announced CSU’s research support ($100,000) for the Education Challenge from 2017. The funding will be used to build on initial research jointly led by Professor John Hicks and Associate Professor Tom Murphy from the Western Research Institute to identify where and what the skills shortages are in regional areas, and to work with local governments, education providers and schools to understand the drivers and mechanisms to create regions with a supply of potential employees.

ILWS members who spoke at the conference included Dr Rui Bi, Professor Mark Morrison, and Institute Adjunct Professor Peter Waterman. Professor Mark Morrison was also involved in pre-conference sessions.

Other conferences

Dr Alexandra Knight and Institute Adjunct Associate Professor Ian Lunt were active participants in the Victorian Biodiversity Conference, held February 6 and 7, 2018, at La Trobe University’s Melbourne campus. The annual conference, which is supported by the Institute and is aimed at Early Career researchers, attracted about 280 people.

Institute Adjunct Dr Swapan Paul and Professor Max Finlayson were on the organising committee of the 6th National Conference of the Australian Mangrove and Saltmarsh Network, held Sydney, April 17 to 20, 2018. Dr Paul presented at the conference which was jointly hosted by the Sydney Olympic Park Authority and Macquarie University.

VISITORS

The Institute has a number of visitors which, at the national level, includes project partners and members of research teams, visiting academics and special invited guest speakers. In 2017 and 2018 some of these visitors were:

Associate Professor Martine Maron

from the University of Queensland’s School of Earth and Environmental Sciences, who visited the Albury-Wodonga campus in March 2017. While here she presented a seminar on “Biodiversity offsetting and no net loss in dynamic landscapes” attended by about 30 people including staff and NRM agency representatives from the NSW Office of Environment & Heritage, and Department of Environment, Land, Water and Planning.

In August, 2017, researchers - Dr Lee Baumgartner, Brett Pflugrath (NSW Fisheries), Dr Luiz Silva, Dr Craig Boys (ILWS Adjunct and NSW Fisheries), Jason Thiem (ILWS adjunct – NSW Fisheries), Gavin Butler (NSW Fisheries), Cameron Westaway (NSW Fisheries) - involved in the Fishing for Answers project, met at the Albury-Wodonga campus to plan their experimental approach and develop a workplan for the coming 12 months.

Dr Judy Dunlop, co-supervisor of ILWS PhD student Harry Moore, visited the Institute in March, 2018. Dr Dunlop from the WA Department of Biodiversity, Conservation and Attractions, gave a presentation on “quolls and rockholes in the Pilbara region” at the Albury-Wodonga campus.
Special guest at a one day workshop “Engaging with Sustainable Development Goals” at Albury-Wodonga campus on October 18, 2018 convened by Professor Manohar Pawar, was Ms Patricia Garcia, AO, National Program Manager UN Sustainable Development Goals, United Nations Association of Australia (UNAA).

AWARDS

Our members continue to be recognised for their contributions to their fields of expertise. Awards at the national level in 2017 and 2018 included:

PhD student Kim Nelson was the lead author of the paper, Nelson, K., Ragusa, A., Black, R. (2018) Qualitative narrative methodology as a framework for understanding self-identity in Niseko, Japan. The paper, which was presented at the 2018 Council for Australasian Tourism and Hospitality Education (CAUTHE) conference, Newcastle, Feb 5-8 was awarded ‘Best Qualitative Paper’ at the conference. Kim was also awarded one of three CAUTHE 2018 PhD Scholar Bursary Awards.

Associate Professor Maree Bernoth and Dr Denise Winkler’s book Healthy Ageing and Aged Care was awarded the 2017 Educational Publishing Awards Australia for the best Tertiary Student Resource at the awards ceremony in Melbourne, September 2017. Maree and Denise are editors of the book, published by Oxford University Press Australia and New Zealand, which features chapters written by a number of ILWS members. The judges commended the publication for the richness of the videos and the quality of the case studies which linked the content to the real world and elevated and humanised the publication. The book also won an Australasian Association of Gerontology Highly Commended Award.

Associate Professor Rachel Whitsed, Dr Alexandra Knight, Associate Professor Rosemary Black and CSU’s Robin Harvey, were co-authors of a paper “Better rural city park planning to improve older people’s health and well- being” which took out the best rural public/population health research presentation at the 2017 NSW Rural Health & Research Congress, Wagga Wagga, September 27-29, 2017. The paper was based on their Better Parks for People project.

Adjunct Dr Penny Davidson was awarded the Frank Stewart Distinguished Service Award at the 2017 National Parks and Leisure Australia Conference on the Gold Coast, October 2017. The Frank Stewart Award recognises an individual who has provided distinguished contribution to the parks and leisure industry over many years. Dr Davidson, a regular presenter at national conferences, was recognised for the extensive contribution she has made through her National Board representation, as well as her ongoing contributions to the industry journal - especially in the areas of academic and practitioner research. In addition, Penny has been Chair of the PLA Advisory committee which advises on policy development and research agendas for Parks and Leisure.

Dr Lee Baumgartner, Dr Wayne Robinson, Dr Joanne Millar, Adjunct Dr Craig Boys, Jarrod McPherson, Dr John Conallin and Dr Nathan Ning, as members of the “Quantifying biophysical and community impacts of improved fish passage in Lao PDR and Myanmar” project, received a CSU Excellence Award on July 18, 2018.

Images

1. Field trip as part of the NAPREC collaboration.
2. Visitor Dr Judy Dunlop from the WA Department of Biodiversity, Conservation and Attractions.
3. Associate Professor Rachel Whitsed (left) and Dr Alexandra Knight (and Associate Professor Rosemary Black) had an award winning paper.
ENGAGEMENT: INTERNATIONAL

STAKEHOLDER ENGAGEMENT

Our members’ engagement with stakeholders at the international level has been crucial in securing funding for our large international projects, maintaining and building on our existing relationships and partnerships, and in achieving the Institute’s mission of enhancing and enhancing research and profile as an internationally recognised provider of integrated quality research that enhances environmental, social and economic conditions in rural and regional areas, in Australia and overseas.

Ways in which our members engage at the international level include being on advisory, technical reference and academic groups; meeting with in-country government ministers and departmental staff; partnering with international academic and research institutions to deliver research projects; representing Australia and the Institute in the international academic arena; presenting at workshops, forums, seminars and conferences; supervising international students and hosting international visitors.

Some examples during 2017 and 2018 include:

As the treasurer of Guiding Organisations Australia, Associate Professor Rosemary Black represented Australia at the 17th International Convention of the World Federation of Tourist Guide Associations (WFTGA) with the convention theme of “Iran: Friendly faces, open arms, ancient cultures, timeless charms” held January 28 to February 1, 2017, in Tehran, Iran.

Professor Max Finlayson, as a member of the Ramsar Convention on Wetlands Scientific and Technical Review Panel (STRP), was highly involved in its planning meetings, workshops, publications, conventions and as a representative at various international conferences. During 2017, he attended two meetings of the STRP at Ramsar’s headquarters in Gland, Switzerland where his main tasks (with colleagues) were to plan and draft a report on the state of the world’s wetlands (presented at the Ramsar Convention in Paris, late 2018) and contribute to a Ramsar report reviewing the application of Earth Observation, for wetland management. He attended his last meeting as a STRP panel member in January, 2018.


Associate Professor Rosemary Black was invited to present a keynote on “Researching tour guides and guiding: Mapping the past, charting the future” as the International Research Forum for Guided Tours, held in March, 2018, at Roskilde University, near Copenhagen, Denmark. This conference, held bi-annually, brings together researchers, students and practitioners interested in tour guides and guiding.

Institute researchers, working in Laos on fish passage research in the Mekong River Basin, have worked with the Australian Embassy to produce a Policy Brief on Research Findings at the request of the Laos government to determine how research outcomes could be translated into new policy. The brief incorporating fish passage in sustainable development practices and policy in Lao PDR outlines the potential policy implications on sustainable fisheries and irrigation expansion in that country. The brief was prepared by the Australian Ambassador to Lao PDR, Mr John Williams, and discussed at a special meeting with the Minister for Agriculture and Forestry in Laos in March, 2017.

Professor David Watson spent a month in Colombia in Latin America mid-2017 where he gave a presentation at the 28th International Congress for Conservation Biology, July 23-27, at Cartagena Colombia on WA’s Great Western Woodlands project, and began research on “call playback”, the use of a phone App to help identify birds, with colleague Dr Mike Craig, from the University of WA. The two spent time out in the field in Colombia with birding guides in the foothills of the Andes.

In June, 2017, Professor Max Finlayson participated in a workshop at the Society of Wetland Scientists Annual Meeting in San Juan, Puerto Rico and presented a paper on mangrove decline in Africa, May 8-12, where, as a joint author he presented a paper on mangrove decline in Kakadu National Park, and June 5-9 attended the Society of Wetland Scientists annual meeting in San Juan, Puerto Rico where he gave a presentation on the die-back of mangroves in Kakadu National Park.

Dr Wayne Robinson worked at the Panthera office in Cali, Colombia for five weeks in April and May, 2017, helping to process and analysing numerous data sets the NGO, which is working to save jaguars, has accumulated over the past several years.

Dr Lee Baumgartner and Institute Adjunct Professor Martin Mallen-Cooper participated in a scoping tour in June 2017 of Xayaburi Dam, the first mainstream dam to be constructed on the Lower Mekong River, northern Laos. The trip was a collaborative effort between Australian and USA scientists to advise on a monitoring program that will be implemented when the dam becomes operational in 2019. The visit occurred by invitation of the Xayaburi Power Company Limited. In November 2017 Dr Baumgartner then participated in a country consultation between Department of Foreign Affairs and Trade and Australian Centre for International Agricultural Research. The aim was to present the new Xayaburi Dam research program to a wide-range of stakeholders including the Ministry of Natural Resources and Environment, the Ministry of Agriculture and Forestry, the Ministry of Energy and Mines and the Mekong River Commission.

Since then the Institute has secured funding from the power company for a project to monitor the effectiveness of the fish passages that have been installed.

Professor Max Finlayson took part in a webinar on the United Nations Sustainable Development Goal 6.6 which is about determining change in wetlands at the global scale, June 2017.

Professor Manohar Pawar is the new president of the International Consortium for climate change and recognises the role that wetlands play in the carbon cycle.

Professor Max Finlayson is a member of the Global Mangrove Watch, an Alliance whose purpose is to provide an update on the change in global mangrove cover since 1995. He participates in regular video conference meetings, and in 2017, attended the 37th International Symposium on Remote Sensing of Environment in Tshwane, South Africa, May 8-12, where, as a joint author he presented a paper on mangrove decline in Kakadu National Park, and June 5-9 attended the Society of Wetland Scientists annual meeting in San Juan, Puerto Rico where he gave a presentation on the die-back of mangroves in Kakadu National Park.
Social Development (ICSD), an international organisation dedicated to creating peaceful solutions to the problems of humanity’s survival at the local, national and global levels. He gave his incoming presidential address at the ICSD’s 20th International Scientific Conference in Zagreb, Croatia, July 7-11, 2017.

In July, 2017 Dr Lee Baumgartner and ILWS PhD student Vu Vi An (who represented the Vietnamese government) attended a planning meeting in Bangkok on extending the outcomes of the ACIAR Fish Passage project in Laos to Cambodia, Myanmar and Vietnam. The meeting was with people from Myanmar Department of Fisheries, ACIAR, US Geological Survey and fisheries agencies in Laos, Vietnam and Cambodia. The Cambodian Secretary of Fisheries His Excellency Nao Thuck, who was at the meeting, has taken a personal interest in seeing this work extended to Cambodia and briefed the Cambodian prime minister on the workshop.

While in Lahore in Pakistan August 21-25, 2017 to progress and set future actions for the ACIAR funded project Improving groundwater management to enhance agriculture and farming livelihoods in Pakistan, Professor Max Finlayson took part in a meeting with that country’s Department of Environmental Protection to discuss water pollution and wetland issues.

On September 7, 2017 Dr Lee Baumgartner gave a presentation to the US State Department in Washington on the ACIAR Fish Passage project and sustainable river development. This followed an informal meeting on the previous day with staff from the US Embassy who specialise in Mekong issues.

Dr Lee Baumgartner, Dr Wayne Robinson, Dr Luiz Silva and PhD student Vu Vi An attended the American Fisheries Society’s 147th Annual Meeting at Tampa, Florida, U.S., August 20-24, 2017 where they ran a symposium on the impact of river development on tropical fisheries. An also gave a presentation on diadromous fish in the Mekong River.

Institute Adjunct Professor Nick Davidson attended a National Climate Change Adaptation Research Facility (NCCARF) workshop in Brisbane in August 2017.

In his capacity as the Ramsar Chair for the Wise Use of Wetlands, Professor Max Finlayson went to The Netherlands in September, 2017 to meet with researchers from IHE Delft to discuss collaboration, future activities, and again in September 2018.

Professor Manohar Pawar was invited by the Council on Social Work Education to present the 2017 Hokenstad International Lecture at the CSWE Annual Program Meeting in Dallas, Texas, October 19-22.

In November 2017 Professor Max Finlayson was in Florida, U.S. where he gave an invited presentation on “Climate Change Impacts on Coastal Ecosystems – Evidence from Australia’s Great Barrier Reef and Mangroves” for the Edward and Bonnie Foreman Biodiversity Lecture Series at Stetson University College of Law, on Tampa Bay in Florida, U.S. and took part in a ELI-Stetson Wetlands Workshop and panel discussion on the state of the Caribbean reefs, Florida mangroves and salt marshes, and Tampa Bay’s seagrass beds.


In November 2017, Associate Professor Maree Bernoth went to Malaysia at the invitation of Nambucca Valley Care, an aged care organisation that CSU has an MOU with. While in Malaysia she looked at that country’s existing aged care facilities and liaised with Malaysian universities and talked about their education programs.

In November 2017 Dr Wayne Robinson and Dr Lee Baumgartner attended a meeting with Mr Khamhou Phanthavong from LAO’s Department of Irrigation, Ministry of Agriculture, Forestry and Fishing (MoAF) and representatives from the World Bank in Vientiane, LAO. The meeting was to discuss a MOU between CSU (and in country partners), the WB and MoAF to oversee a monitoring program to evaluate the efficacy of a number of MAF works that have been installed on irrigation structures with an aim to improve fish migration.

Professor Manohar Pawar was invited to deliver a special guest lecture at University of Mysore, Mysore, India, on January 8, 2018. He presented some of the findings of his ARC Discovery project, Virtuous practitioners: empowering social workers.

A group of water managers from Talanga and Andhra Pradesh, India visited Australia on an ICEWaRM technical tour in January, 2018. The NSW leg, led by Dr Kelvin Montague, focussed on water management along the Murrumbidgee River. On January 25, the group met up with ILWS member Dr Julia Howitt and CEWO’s Madeline Gorham at CSU’s Wagga Wagga campus and gave presentations that provided greater insight into the management and complexities of environmental water.

As a member of Scientific Committee of the International Lake Environment Committee (ILEC) Professor Max Finlayson was in Kusatsu City in Japan, January 2018, for a meeting to plan the 2018 International Lake conference.

Dr James Van Dyke gave a presentation on “Integrating animal reproduction: applications from evolution to conservation” to the Department of Ecology, James Madison University in Virginia, U.S. on January 26, 2018.

Institute Adjunct Dr Swapan Paul gave a presentation at a special symposium at Nanjing University, China, organised with the Ramsar Convention on Wetlands, Feb 2-4, 2018 on the successful marriage between urban development and wetland conservation within Sydney Olympic Park.

Dr Michael Mitchell, Dr Richard Culas and Institute Adjunct Dr Jay Punthakey were part of an ACIAR delegation that met with Mr Sajid Jamal Abro, Secretary Agriculture, Supply & Prices Government of Sindh and his team in Karachi, Pakistan, February 7, 2018. The meeting was to further scope the ACIAR project Improving Salinity and Agricultural Water Management in the Indus Basin of Pakistan. Dr Michael Mitchell, Dr Jay Punthakey and Dr Richard Culas also attended a meeting at the IUCN (International Union for the Conservation of Nature) office in Karachi, Pakistan on February 10, 2018.

The Red Panda Conservation Workshop: Ensuring the future of red panda landscapes through national and regional collaboration, was held May 1-3, 2018, in Bhutan. The workshop was organised by ILWS researchers Dr Joanna Millar and Dr Kuenga Tenzing, Sakteng Wildlife Sanctuary, Department of Forest & Park Services, and WWF Bhutan.

Dr Rachel Whitsed presented a paper, Whitsed, R.; Horta, A., Soares, A. & Jelinek,
H. (2018) An Uncertainty-Based Approach to Quantify the Spatial Representativeness of Local Health Datasets, at the 13th International Symposium of Spatial Accuracy in Beijing, China (21-25 May)

Conference papers


EVENTS

During 2017 and 2018 the Institute organised and sponsored a number of events with an international focus and partners. These include:

Opportunities in Myanmar workshop

In February, 2017, ILWS hosted a workshop focused on project partnership opportunities in Myanmar. The three-day workshop, held in Albury, brought together experts with specialities in economic development, fisheries, sediment, river flow, wetlands, sustainable development, to consider opportunities for Basin scale planning for Myanmar.

Fourteen people attended the workshop which was organised and facilitated by Dr Lee Baumgartner and Dr John Conallin under the direction of Institute Director Professor Max Finlayson, also the Ramsar Chair for the Wise Use of Wetlands with IHE-Delft.

Attendees included international visitors, Professor Ken Irvine from Delft-IHE, The Netherlands, and Prof Doug Shaw from The Nature Conservancy, Minnesota, USA (whom and Institute Adjuncts Dr Martin Mallen-Cooper, from Fishway Consulting Services and Dr Tim Marsden from Australasian Fish Passage Services.

The team spent three days in detailed discussions regarding potential research priorities on water and land development issues in Myanmar. They settled on four thematic areas for further development:

- Migratory fish ecology and connectivity
- Sustainable hydro-power
- Irrigation systems and off-channel habitats
- Integrated water resource management in Inle Lake

The meeting was very productive and set the scene for future international collaboration which has since eventuated.

Reflecting on Practice workshop

The Institute hosted a meeting of an international, cross discipline and multi-institutional research group which met in Seymour, Victoria, October 1-3 to continue work on its project “Reflecting on Practice: Exploring the effects of education for sustainability in teacher education, professional development, and community engagement.” The group of which Dr John Rafferty is a member, included academics from Manhattan College and the University of Vermont, in the USA, and other Australian tertiary institutions.

Fish Passage 2018

Hailed as a resounding success, the 2018 International Conference in River Connectivity, which incorporated the First Symposium on Hydropower and Fish Management, attracted over 350 delegates from over 30 countries around the world to the Albury Entertainment Centre, Albury, NSW, December 10-14.

It was the first time the conference, co-hosted by NSW Department of Primary Industries- Fisheries and the Institute for Land, Water and Society, was held in the Southern Hemisphere. Australia put up its hand in 2016 to hold the conference in Inle Lake 

Other than the many and varied conference presentations, other highlights of the conference were the welcome reception and cultural evening which included a traditional smoking ceremony and welcome to country; the announcement of the 2018 Distinguished Project Award which went to a research team led by Dr Lee Baumgartner; the launch of the Wetland Book 1 and 2, of which Professor Max Finlayson is the lead editor; launch of a Special Issue of Marine & Freshwater Research “Fish Passage 2018 & Hydropower Symposium” produced specifically for the conference; the public lecture by National Geographic Channel presenter and University of Nevada academic Dr Zeb Hogan; the announcement of the 2018 Career Achievement Award which went to Institute Adjunct Professor Mallen-Cooper; and the First Symposium on Hydropower and Fish Management, organised by Dr Luis Silva.

A number of pre-conference workshops were held at CSU Albury-Wodonga campus including an ILWS organised workshop "SDGs, fisheries production and irrigation modernisation", which sought to link the
Sustainable Development Goals concept to global inland fisheries production. The workshop was attended by 26 participants from countries including the USA, Lao PDR, Romania, Germany, Indonesia, The Netherlands, South Africa, Myanmar, Vietnam, Cambodia, the UK, Italy, Brazil and Australia and New Zealand.

The conference attracted not only financial support from ACIAR, sponsors Hydro Tasmania, the NSW Government, the Fisheries Research and Development Corporation, and various agencies, but extensive media coverage, regionally and nationally.

Some of the many international visitors/partners with whom the Institute has connections and who attended the conference included:

- a team from Myanmar including the Director General of Myanmar’s Department of Fisheries, Khin Maung Maw, international Relations project Officer Nyunt Win, Fisheries Director (Kachin State) Maung Maung Lwin, and irrigation engineer with the Department of Irrigation, Kyi Wai.

- Dr Arif Wibowo, Director of the research Institute for Inland Fisheries and Chief of the Inland Fishery Resources Development and Management Department - South East Asian Fisheries Development Centre, Indonesia.

- Professor Jürgen Geist, chair professor of the Aquatic Systems Biology and director of the Limnological Research Station, Technical University of Munich, Germany.


VISITORS

The Institute always seems to get lots of international visitors and 2017 and 2018 were no exception.

Two of our visitors have research interests aligned with Indigenous knowledge and communities. They were:

- International academic scholar and First Nations Human Rights activist Professor Cindy Blackstock from Canada visited CSU Bathurst as a Visiting Scholar, August 27 to 31, 2018. While here Professor Blackstock, whose visit was funded by the Faculty of Arts & Education, gave a public lecture on “Indigenous ways of doing moral and respectful courage” on August 28. Her visit also provided an opportunity for CSU researchers to engage with Professor Blackstock to develop an “Indigenous Knowledges Stream” at CSU.

- Associate Professor Doug Bird, from Pennsylvania State University, U.S visited the Institute in May, 2017. While here he gave a seminar at the Albury-Wodonga campus on May 17 on ‘Livelihoods, fire regimes and novel ecosystems in Indigenous Australia.’ He is an Associate Professor of ecological anthropology, with broad interests in how social and ecological factors interact to influence patterns of resource use and their archaeological expressions. He and his wife Professor Rebecca Bird are collaborators on Dr Dale Nimmo’s ARC Discovery Early Career Researcher Award project Can Indigenous land management forestall an extinction crisis? (2017-2020) which builds on the team’s Hermon Slade Foundation funded project Can Indigenous fire management restore mammal communities? (2016-2019)

Apart from those who came for the Fish Passage 2018 conference other international visitors included:

- Professor Ken Irvine, Chair of the Aquatic Ecosystems Group, IHE-Delft’s Water Science and Engineering Department, and Dr Doug Shaw, the Associate State Director for the Nature Conservancy in Minnesota, North Dakota and South Dakota. The two attend the “Myanmar Project Partnership Opportunities” workshop, held on CSU’s Albury campus, February 7-9.

- Dr Gordon O’Brien a principal scientist from the University of KwaZulu-Natal, in South Africa, who specialises in fish ecology, visited Australia in September, 2017. While here Dr O’Brien visited the Yarrawonga Fish Lift, for the first lift of the season. He also attended the Fish Passage 2018 conference.

- Institute Adjuncts Professor Nick Davidson and Mr Rob McInnes, both from the UK, were in Australia in October for a week in 2017 to work with other Institute researchers on an international citizen-science project on the state of the world’s wetlands. The volunteer project was launched in May 2017 and is a collaboration between ILWS; the Society of Wetland Scientists, (particularly its Ramsar section of which Mr McInnes is a past chair and Professor Davidson the current chair); the World Wetland Network, a network facilitating engagement with local (mostly community based) wetland related NGOs world-wide; and the UK based Wildfowl & Wetlands Trust.

In 2017 a PhD student from Brazil André Vieira Galuch was based at CSU’s Albury-Wodonga campus for a couple of months as a visiting scholar. While here, André, a student of the course of Freshwater Biology and Inland Fisheries (BADPI) at the National Institute of Amazonian Research (INPA), in Manaus, Amazonas, Brazil, worked on his PhD “Larval fish and the impact of dams on the Madeira River,” and with fish ecologist Dr Paul Humphries on their mutual study area – the dispersal of larval drift in relation to flow. His visit was sponsored by Brazilian Federal Agency for Support and Evaluation of Graduate Education.

In December 2017, Dr Lee Baumgartner, Dr Luiz Silva and Mr Vu Vi An hosted a delegation of scientists from Indonesia who were interested in learning about fish passage and potential applications in tropical systems. The delegation included Dr Arif Wibowo and Dr Vipen Adisanh who were treated to a tour of Southern NSW and the ACT. The delegation stopped at the Yarrawonga fishlift, various fishway sites in Deniliquin, Narrandera Fisheries Centre, Charles Sturt University in Wagga and ACIAR in Canberra.

Five economists from the Institute’s groundwater project in Pakistan were in Australia May 26 to June 3, 2018, to attend a training program in Sydney where they learnt how to use MAD (Mobile Acquired Data) applications for collecting survey data. While here they met with project team members Associate Professor Catherine Allan, Dr Michael Mitchell, Dr Jay Punthakey and Dr Richard Culas.

Jan du Preez, from JAD Systems, was in Australia in June for a week in 2018 to work closely with ILWS staff to install, commission and train researchers to use his Fast transient Hyperbaric Chamber. This special piece of laboratory equipment, which Jan designed and built overseas (in the U.S. and South Africa) is being used for Snowy Hydro project, Predicting redfin survival through
the National Association of Professional

Professor Manohar Pawar was awarded

that aims to mitigate the impact of hydro-

Sustainable Development, a Brazilian national

right) received the Odebrecht Award for

In October 2017 (pictured

Dr Luiz Silva and other members of that

ILWS team. Eduardo was on a scholarship from the Brazilian Council of Higher Degree Programs (CAPES) via a program of the Brazilian Federal Government to provide for international exchange of higher degree students.

Visiting the Institute twice in November, 2018, was PhD student Sam Perrin from the Norwegian University of Science and Technology. Sam, whose PhD is looking at the effect of climate change on freshwater fish communities, particularly invasive species, was here to write a collaborative paper with Dr Keller Kopf and to do some field work for a project Keller leads Native and invasive fish dispersal, spawning and trophic dynamics during a managed river-floodplain connection.

Conservation biologist Dr Alex Bond, who is the Senior Curator in Charge of Birds at the Natural History Museum in London, visited the Institute and CSU’s Albury-Wodonga campus in December 2018 where he gave a talk on "Trash Talk; The story of the Shearwater and the Bottle Cap."

**AWARDS**

Our members also continue to be recognised for their contributions to their fields of expertise in the international arena. In 2017 and 2018 these included:

**Professor Max Finlayson** was elected by the Board of the Society of Wetland Scientists as a Fellow of the Society. His award was presented at the society’s annual meeting in June 2017 in San Juan, Puerto Rico.

In October 2017 **Dr Luiz Silva** (pictured right) received the Odebrecht Award for Sustainable Development, a Brazilian national sustainability award for his work on a project that aims to mitigate the impact of hydro-turbines (hydropower) on fish mortality.

**Professor Manohar Pawar** was awarded the National Association of Professional Social Workers in India (NAPSWI)’s Lifetime Achievement Award for 2017. NAPSWI is one of the largest organisations of social workers in India. The annual award is given to a professional social work educator who has made a significant contribution by enriching the knowledge base of the social work profession at the global level. The award was presented at the 54th Indian Social Work Congress, November 10–12, 2017, at Shree Shankaracharya University of Sanskrit, Kalady, Kerala, India.

Adjunct Rob McInnes received an International Fellow of the Society of Wetland Scientists at the Society’s annual meeting in Denver, Colorado, May 29 to June 1, 2018.

**Associate Professor Dominic O’Sullivan’s** book *Beyond Bioculturalism: the politics of an indigenous minority* (2007) was selected by The Royal Society of New Zealand in 2018 as one of the 150 most important scholarly books by a Maori author since the first published work in 1815. Another book on the list, *Terror in Our Midst*, includes a chapter written by **Associate Professor O’Sullivan**.

**Professor Manohar Pawar** was one of the three Charles Sturt University (CSU) social work academics named ‘Social Work Educator of the Year’ at the 2018 Australia and NZ Social Work and Welfare Education and Research Symposium in September. The award was won by Professor Pawar, Professor Wendy Bowles and Associate Professor Karen Bell for their new book, *Social work: innovations and insights*, that compiled presentations and issues covered at a 2017 symposium celebrating 25 years of social work education at CSU.

ILWS members won two of the four best paper awards at the International Communication and Media Conference (ICome) in Penang, Malaysia, October 20–21, 2018. PhD student Lucia Würsch and **Associate Professor Peter Simmons** won best paper for a study based on Lucia’s doctoral studies: *Würsch, L. & Simmons, P.* (2018) Human and strategic benefits arising from embedding Transactional Analysis in an organisation; and **Associate Professor Peter Simmons** and Dr Michael Mehmet won best paper for a paper based on their research examining shark management: *Simmons, P. & Mehmet, M.* (2018) Respect for marine life, hope for technology, and anger at the media: A focus group and social media study of ocean user attitudes to shark management.

 Adjunct Professor Martin Mallen-Cooper was awarded the 2018 Career Achievement Award at the international Fish Passage 2018 conference held December 2018 in Albury for his decades of contributions to the field.

The research project *Fish passage research and development at low-head barriers in Southeast Asia* led by Dr Lee Baumgartner was awarded the Distinguished Project Award at the international Fish Passage 2018 conference in Albury, December 2018. The award recognised the collaborative efforts of the National University of Laos, the Lao Living Aquatic Resources Centre, ILWS and the NSW Department of Primary Industries in developing effective fish passage criteria at low-head barriers in the Mekong River catchment in Lao PDR.

An ILWS team (**Associate Professor Dale Nimmo, Dr James Turner, Dr James Van Dyke, Dr Maggie Watson**, PhD student **Harry Moore**) together with Karen Retra and Dr Damian Michael competed in the first annual QuestaGame University bioQuest, an app-based game that lets users all over the world win points by spotting, photographing and identifying wildlife. Over the month the team found 224 different species, more than half of which were on CSU’s Albury-Wodonga campus. The team won the Most Valuable Team Ribbon, or the team with the highest average number of points per player. Additionally our players were in the top 10 in five of the six game categories, including Top Spotters - Universities, Correct Identiﬁcations - Top Teams and Top Spotters (Individuals).

Dr Julia Howitt was the winner of the #Chem4Life Outreach Competition (which ran November 12–18,2018) sponsored by open access publisher Hindawi for her tweets on carbon and nutrient dynamics in rivers/floodplains.
1. Members of the research project team that won the Distinguished Project Award receive their award at Fish Passage 2018 conference in Albury, NSW.

2. Professor Max Finlayson with Fish Passage 2018 speaker Professor Jürgen Geist from Germany.

3. Associate Professor Maree Bernoth was in Malaysia to look at that country’s existing aged care facilities and liaise with Malaysian universities.

4. Jan du Preez, from JAD Systems, was in Australia working to install, commission and train researchers to use his Fast transient Hyperbaric Chamber.

5. ILWS researchers were part of an ACIAR delegation that met with Mr Sajid Jamal Abro, Secretary Agriculture, Supply & Prices, Government of Sindh, and his team in Karachi, Pakistan.

Images

1. Members of the research project team that won the Distinguished Project Award receive their award at Fish Passage 2018 conference in Albury, NSW.

2. Professor Max Finlayson with Fish Passage 2018 speaker Professor Jürgen Geist from Germany.

3. Associate Professor Maree Bernoth was in Malaysia to look at that country’s existing aged care facilities and liaise with Malaysian universities.

4. Jan du Preez, from JAD Systems, was in Australia working to install, commission and train researchers to use his Fast transient Hyperbaric Chamber.

5. ILWS researchers were part of an ACIAR delegation that met with Mr Sajid Jamal Abro, Secretary Agriculture, Supply & Prices, Government of Sindh, and his team in Karachi, Pakistan.
INTERNAL ENGAGEMENT

The Institute promotes internal engagement amongst its members and with the wider CSU community by organising activities and events, training courses, special morning teas to welcome visitors and new members, and internal communications which include the fortnightly email bulletin ILWS Updates; and the quarterly Institute newsletter Connections which has both an internal and external audience. Internal events in 2017 and 2018 included:

**ILWS BOOK LAUNCH**

ILWS hosted a special morning tea for 38 guests on February 27, 2018 to launch six books by ILWS authors/editors. The books show the diversity of our research expertise and include chapters by other ILWS members. Of special note is *Community Forestry in Nepal*, edited by Dr Rik Thwaites, Robert Fisher and Dr Mohan Poudel. This book is the culmination of 10 years work and includes research which resulted in four PhDs. The books are:

- *Healthy Ageing and Aged Care*, published by Oxford University Press. The book has won two national awards – the 2017 Educational Publishing Awards for the best Tertiary Student Resource, and an Australasian Association of Gerontology Highly Commended Award. The book contains a combination of stories about older people, pictures and videos...and very few stats. ILWS members who contributed chapters to the book include Associate Professors Oliver Burnmeister, Rylee A. Dionigi, and Susan Micek.
- *Community Forestry in Nepal: Adapting to a Changing World*, published by Routledge. Dr Rik Thwaites is the lead editor of the book *Community Forestry in Nepal: Adapting to a Changing World*, published by Routledge, along with Robert Fisher and former ILWS PhD student Dr Mohan Poudel. Dr Thwaites is a co-author of nine of the book’s 10 chapters, a number of which are based on the research findings of four previous ILWS PhD students – Dr Mohan Poudel, Dr Binod Devkota, Dr Popular Gentle and Dr Eak Rana. Former ILWS member Dr Digby Race has also co-authored two chapters.
- *Freshwater Ecosystems in Protected Areas: Conversation and Management*, published by Routledge. The book is part of the Earthscan Studies in Water Resource Management series and shows that, rather than being a marginal part of a protected area management, freshwater conservation is central to sustaining biodiversity. The book is aimed at experts who need to manage or understand how the systems work, those who train others who work in these systems plus those who need to inform the policy makers.
- *Practitioners: Empowering Social Workers*, published by Springer. Future Directions in Social Development, for which Professor Pawar wrote four chapters, came out of the 4th International Consortium for Social Development (ISCD) – Asia Pacific conference, “Envisioning New Social Development Strategies Beyond Millennium Development Goals,” held in Yogyakarta, Indonesia, in 2012. As well as presenting the historical context and progress of social development, the book, by reflecting on the Millennium and Sustainable Development Goals, discusses the increasing global relevance of several critical themes and issues such as human rights and good governance, participation, peace, gender, environment, religion and spirituality, ageing, social protection and partnership.

**SDGS WORKSHOP**

Eleven people had the opportunity to hear an enthusiastic presentation on October 18, 2018, on the current state of the world’s Sustainable Development Goals (SDGs) and, in particular, how Australia is faring (or not faring as is the case) at an ILWS “Engaging with Sustainable Development Goals” workshop at the Albury-Wodonga campus.

The aim of the one-day workshop was to brainstorm potential engagement with the SDGs in terms of research and grants and interdisciplinary perspectives. Special guest at the workshop, which was convened by Professor Manohar Pawar, was Ms Patricia Garcia AO, National Program Manager UN Sustainable Development Goals, United Nations Association of Australia (UNAA). Professor Pawar said he was motivated to organise the workshop because of the members’ interest in discussing the SDGs. The workshop generated practical ideas of how ILWS can contribute to achieving the SDGs.

**CREATING VIDEO WORKSHOPS**

The Institute ran two workshops to introduce members to the basic steps involved in creating and editing videos at workshops held on the Albury-Wodonga campus, May 18, 2017 and again June 26, 2018. The workshops were run by Institute Adjunct Professor Ian Gray who has been making videos to support his reach on reviving regional railways, and ILWS social media co-ordinator Simone Engdahl. (Participants pictured below)
1. Participants in the Sustainable Development Goals workshop included Professor Manohar Pawar, Associate Professor Dominic O’Sullivan, Dr Ndungi Mungai, Dr John Rafferty, Dr Wes Ward, Dr Helen Masterman-Smith, Dr Belinda Cash, Patricia Garcia, AO, Dr Jamin Forbes, Dr Rik Thwaites and Dr Andrew Manning.

2. ILWS PhD student Matt O’Connell talking to media.

3. Professor Max Finlayson being interviewed by 8 year old Max Whitsed.

4. 2018 ILWS book launch. (From left) Dr Jennifer Munday, Dr Denise Winkler, Associate Professor Maree Bernoth, Associate Professor Dominic O’Sullivan, Professor Manohar Pawar, Dr Rik Thwaites, Dr Bill Anscombe and Professor Max Finlayson.
Our members engage regularly with the media and are often called upon to provide expert advice and commentary on important issues affecting rural and regional Australia.

Engaging with the media also provides the opportunity for our researchers to engage with the wider community and to promote and publicise their research and findings.

Our researchers engage with both traditional media (print, radio and TV) as well as social and on-line media.

This engagement with the media or “media hits” is recorded on the Institute’s In the News web pages on a daily basis using information for the University’s media monitoring service.

All media releases featuring the views and/or research work of our members are issued by CSU Media. In 2017 and 2018 there were a total of 91 media releases which covered a broad range of topics reflecting the diversity of our members’ research expertise. All releases are accessible on our web pages.

Stories which got particularly high and widespread media uptake included:

- Professor Adam Steen’s research project on Estate Planning Australia and what happens to your digital assets when you die
- Associate Professor Maree Bernoth’s research and views on the need for aged care reform
- commentary from our aquatic ecologists on the Murray-Darling Basin Plan and related issues (Associate Professor Skye Wassens, Dr Lee Baumgartner, Professor Max Finlayson, Professor Robyn Watts, Institute Adjunct Dr Martin Mallen-Coooper)
- Associate Professor Dominic O’Sullivan’s political commentary on a range of issues. On December 4, 2018 he did his 500th media interview for public and commercial radio, television and print, including more than 300 live radio interviews.
- the juvenile justice system and child protection/out-of-home care (Dr Kath McFarlane, Dr Emma Colvin)
- benefits and costs of birds for agriculture (Dr Rebecca Peisley)
- effects of fire and dingoes on fox numbers (Associate Professor Dale Nimmo)
- Murray cods (PhD student Matt O’Connell)
- women in male dominated trades (Dr Larissa Bamberry, Dr Donna Bridges)
- resignation from the NSW Government’s Threatened Species Scientific Committee after the passing of the government’s “brumby bill” (Professor David Watson)
- media fuelling shark fear (Associate Professor Peter Simmons)
- release of the carp herpes virus (Dr Keller Kopf, Institute Adjunct Dr Martin Mallen-Coooper)
- recycling hospital waste (Professor Linda Shields)
- Global Wetland Outlook: State of the World’s Wetlands and their services to people (Professor Max Finlayson and a number of ILWS Adjuncts) Featured in more than 700 on-line articles around the world
- Fish Passage 2018 conference
- Two of our members have regular radio segments:
  - Dr John Rafferty’s “The Science of Stuff” on ABC Goulburn-Murray mornings
  - Associate Professor Dominic O’Sullivan’s “The Week in Politics” airs on ABC Goulburn-Murray and ABC Shepparton, with another regular segment airing on ABC Central West and ABC Western Plains.

Our members also regularly write Opinion Pieces and Articles for on-line news services such as The Conversation and Open Forum.

During 2017 there were 18 Opinion pieces authored or co-authored by our members; in 2018 that number increased to 29. By far the most prolific writer is Associate Professor Dominic O’Sullivan who had a total of 21 opinion pieces published. 2018 also saw Associate Professor O’Sullivan publish his 50th Opinion Piece. All Opinion Pieces by members are recorded on our web pages.

Social Media

The Institute’s social media channels, Facebook, Twitter, and Youtube, have enabled a wider sharing of our news, research, events and researchers’ new publications with an ever growing national and international audience. Our Facebook followers steadily increased and passed 500 by the end of 2018. Our Twitter audience also grew and achieved over 131,700 impressions of our tweets in 2017/18 and we increased our followers by 147 to finish at the end of 2018 with 592. Our reach on our daily posts generally averages 150 people.

Our most popular posts on social media continue to be celebrations of HDR student achievements (2018 graduation reached 959); visitors to the Institute including the post “Seven Fishy Amigos” about NSW Fisheries staff visiting Dr Lee Baumgartner to work on Fishing for Answers research project on August 3, 2017 going out to 1119 people and 296 engagements. Our frequent links to member’s articles in The Conversation see them reach a wider audience as well.

The article “What the world needs now to fight climate change”by Professor Max Finlayson et al reached a combined audience of over 1800 and also over 50,000 reads on The Conversation making it one of the most popular articles that month.

Interesting research finds are also popular including the discovery of river blackfish in Yallakool Creek, posted on May 31 2018 which reached 1166 readers and prompted 292 engagements.

On June 7, 2018 Prof Dave Watson resigned from the NSW Threatened Species Scientific Committee. His letter explaining his decision was posted on our Facebook page and Twitter feed. On Facebook it was our most engaging post for the year with a reach of 59,290 and 11,739 engagements. It also generated a string of comments and shares.

The volume of posts has been increasing with our sources for posts coming from CSU media releases, re-posts from members personal blogs and social media, member engagement activities and members publications.
The Institute’s postgraduate students and their various research projects enhance and contribute to the body of research undertaken by the Institute. Students’ principal supervisors are generally members of the Institute while co-supervisors, often Adjunct Institute members, may come from other universities, natural resource management agencies, industry, government and non-government organisations, or other research institutions. In 2017 the Institute had 54 Higher Degree Research (HDR) Student Members, of which 13 graduated. In 2017, there were 35 HDR students, of which six graduated. The Institute offers two Government funded HDR scholarships each year to students whose research topic is aligned with one or more of the Institute’s Research Themes.

2017 ILWS scholarship recipients

Michael Vanderzee
**Topic:** Socio-ecological impacts of water recovery for the environment in the Murray-Darling Basin

**Supervisors:** Professor Max Finlayson (Principal), Associate Professor Jamie Pittock (ANU) and Dr Jennifer Bond

**Research Theme:** Environmental Water

This study is focussed on three major water recovery programs undertaken in the Murray-Darling Basin since 2002 - the Snowy Water Initiative, the Living Murray Initiative and the Murray-Darling Basin Plan - all of which had different governance arrangements. It is investigating how they have been implemented, their success (or otherwise) in terms of water recovery for environmental flows, and the socio-ecological implications of each program. It will look at lessons from the Australian experience and compare them to an international experience to see what lessons there may be for the future in terms of addressing environmental water scarcity in the face of global change i.e. climate change, globalisation, corporate agriculture.

Harry Moore
**Topic:** Northern quolls in the Pilbara Region of WA

**Supervisors:** Dr Dale Nimmo (Principal), Professor David Watson, Dr Euan Ritchie (Deakin University), Dr Leonie Valentine (University of Western Australia) and Dr Judy Dunlop (WA Department of Biodiversity, Conservation & Attractions)

**Research Theme:** Biodiversity Conservation

This study, on the interactions between the Northern Quoll (an endangered marsupial), predators and fire, and the dynamics of different habitats and landscapes, complements the Pilbara Region Quoll Monitoring Program. Camera traps have been set up on 24 landscapes over 6000 square km to monitor quolls and predators, in the context of the fire history, composition and extent of the quoll’s rocky habitat. The project aims to enhance understanding of key habitat requirements for northern quolls and their habitat use, and their key threats. It is supported by funding from WA Department of Biodiversity, Conservation & Attractions ($78,000) and a Holsworth Wildlife Research Endowment ($5500).

2018 ILWS scholarship recipients:

Joshua Hodges
**Topic:** Post-fire seedling recruitment in grasslands of south-eastern Australia

**Supervisors:** Dr Jodi Price (Principal), Dr Lydia Guja (Australian National Botanical Gardens) and Professor Adrienne Nicotra (ANU)

**Research Theme:** Biodiversity Conservation

This study, which builds on Joshua’s 2017 Honours project, is investigating further how Australia’s grasslands and grassy woodlands respond to fire. Joshua is doing a mixture of field and laboratory experiments (at the Australian National Botanical Gardens) to assess factors which influence seedling recruitment such as germination, dormancy and seed longevity at the community level. His research is supported by funding from the Australia Flora Foundation ($18,181)

Dr Richard Segal
**Topic:** Investigating the effects of rodent eradication on the threatened Lord Howe currawong

**Supervisors:** Dr Melanie Massaro, Dr Rachel Whitsed and Nicholas Carlile (NSW OEH)

**Research Theme:** Biodiversity Conservation

The aim of this study is to investigate how a rodent eradication program on Lord Howe Island during the 2019 winter will impact the Lord Howe currawong and its diet; and how a dietary shift by currawongs may influence the breeding success of white terns and the dispersal of invasive plants. The currawong is a known predator of white tern offspring. Pre-eradication data has already been collected. This research project is supported by funding from the Australia and Pacific Science Foundation ($36,240.)
Much of the important research carried out by the Institute is undertaken by post-graduate students under the supervision of Institute researchers. Graduation days are a big celebration of all the years’ of work accomplished by our students.

2017 Graduations

1. (From Left) Drs Zsofia Palfi, Jess Schoeman, James Dyer, Carmen Amos, Rebecca Peisley, Cécile van der Burgh, Samantha Strong, Xiaoying Liu (Sha Sha)
2. Supervisor Professor Mark Morrison with Dr Buyani Thomy
3. Vice Chancellor Professor Andy Vann and Dr Jennifer Woods.

2018 Graduations

4. Dr Adrian Clements congratulated by his Supervisor Professor Max Finlayson.
5. Supervisors Dr Keller Kopf, Professor Robyn Watts, with Drs Daniel Svozil, Adrian Clements and Supervisor Associate Professor Lee Baumgartner.
During 2017 and 2018 Institute members continued to produce numerous journal articles for an extensive range of national and international academic journals.

These include:

- African Studies Review,
- Alternative Law Journal,
- Annals of Leisure Research,
- Analytical Methods,
- Animal Conservation,
- Animal Studies Journal,
- Applied Energy,
- Applied Ocean Research,
- APT Bulletin,
- Australian Bulletin of Labour,
- Australian Critical Care,
- Australian Journal of Botany,
- Austral Ecology,
- Australian and International Journal of Rural Education,
- The Australasian Journal of Popular Culture,
- Australian Nursing and Midwifery Journal,
- Australian Mammalogy,
- Australian Social Work,
- Australian and New Zealand Journal of Criminology,
- Australian Planner,
- Australian Journal of Environmental Education,
- Australian Journal of Zoology,
- Conservation Biology of Australian Freshwater Turtles,
- Austral Ecology,
- Biodiversity and Conservation,
- Biological Conservation,
- Biological Reviews,
- Bird Conservation International,
- Biological Conservation,
- Canadian Journal of Fisheries and Aquatic Sciences,
- BMC Genomics,
- Cities: The International Journal of Urban Policy and Planning,
- Chemometrics and Intelligent Laboratory Systems,
- Climatic Change,
- Computational Thermal Sciences,
- Conservation Biology,
- Conservation Genetics,
- Conservation and Society,
- Comprehensive Child and Adolescent Nursing,
- Current Issues in Criminal Justice,
- Current Opinion in Environmental Sustainability,
- Diversity and Distribution,
- Ecohydrology,
- Ecological Management and Restoration,
- Ecology of Freshwater Fish,
- Ecological Economics,
- Ecological Engineering,
- Ecosystem,
- Electronic Journal of Information Systems Evaluation,
- Emu - Austral Ornithology,
- Environmental Development,
- Environmental Management,
- Environment,
- Development and Sustainability,
- Ecological Management and Restoration,
- Environmental Research Letters,
- Environmental Science and Pollution Research,
- Equine Veterinary Journal,
- European Journal of Lipid Science Technology,
- European Journal of Ecology,
- Evidence Based Nursing,
- Fish and Fisheries,
- Fisheries Management and Ecology,
- Fisheries Research,
- Frontiers in Ecology and Evolution,
- Frontiers in Veterinary Science,
- Food chemistry,
- Forensic Science International,
- Futures,
- GeoForum,
- GeoJournal,
- Global Environmental Change,
- Hystrix, Holistic Nursing Practice,
- Howard Journal of Crime and Justice,
- Human Dimensions of Wildlife,
- Integrative Food, Nutrition and Metabolism,
- Integrative Zoology,
- International Journal of Educational Technology in Higher Education,
- International Journal of Engineering Education,
- International Journal of Innovation,
- Creativity and Change,
- International Journal of the Commons,
- International Journal of Mental Health Nursing,
- International Journal of Military History and Historiography,
- International Journal of Environmental Research and Public Health,
- International Planning Studies,
- International Review of Sport and Exercise Psychology,
- International Journal of Safety and Security Engineering,
- International Journal of Mental Health Promotion,
- International Journal of Orthopaedic and Trauma,
- International Journal of Building Pathology and Adaptation,
- International Journal for Parasitology,
- International Social Work,
- Insect Conservation and Diversity,
- Journal of Analytical Toxicology,
- Journal of Amateur Sport,
- Journal of Applied Ecology,
- Journal of Child Health Care,
- Journal of Disaster Risk Reduction,
- Journal of Australian Indigenous Studies,
- Journal of Ecoacoustics,
- Journal of Experimental Zoology Part A: Ecological and Integrative Physiology,
- Journal and Proceedings of the Royal Society of New South Wales,
- Journal of Medical Biography,
- Journal of Ageing and Physical Activity,
- Journal of Ageing and Mental Health,
- Journal of Ageing and Social Change,
- Journal of Psychology and Sport Exercise,
- Journal of Child Health Care,
- Journal of Clinical Nursing,
- Journal of Construction and Building Materials,
- Journal of Environmental Management,
- Journal of Small Business Management,
- Journal of Cultural Heritage Management and Sustainable Development,
- Journal of Housing and the Built Environment,
- Journal of Sikh and Punjab Studies,
- Journal of Sustainable Tourism,
- Journal of Outdoor Recreation and Tourism,
- Journal of Retailing and Consumer Services,
- Journal of Vegetation Science,
- Journal of Cleaner Production,
- Journal of Pacific History,
- Journal of Rural Studies,
- Journal of Social Sustainability in Economic, Social & Cultural Contexts,
- Journal of Medical Biography,
- Journal of the Royal Australian Historical Society Land Use Policy,
- Journal of Forensic Practice,
- Journal of Sports Sciences,
- Journal of Water Resources Planning and Management,
- Landscape and Urban Planning,
- Local Environment,
- Marine Policy,
- Mammal Review,
- Marine and Freshwater Research,
- MethodsX,
- Mortality,
- Mountain Research and Development,
- Nature Ecology and Evolution,
- Nordic Journal of Nursing Research,
- Nursing Open,
- Nursing Children and Young People,
- Ocean & Coastal Management,
- Palms,
- Psychology of Sport and Exercise,
- Qualitative Social Work,
- Restoration Ecology,
- Restoration of Buildings and Monuments,
- Remote Sensing,
- Science, River Research and Applications,
- Royal Society Open Science,
- Small Business Economics,
- Small Enterprise Research,
- Social Development Issues,
- Space and Culture,
- Sustainability,
- The Ecological Citizen,
- The Rangeland Journal,
- The Solutions Journal,
- Transylvanian Review of Systematical and Ecological Research,
- The Journal of Comparative Politics,
- The International Journal of Civic, Political, and Community Studies,
- Ticks and Tick-borne Diseases,
- Topics in Geriatric Rehabilitation,
- Transactions of the Royal Society of South Australia,
- Planning Practice & Research,
- PLOS ONE,
- Polar Biology,
- Restoration Ecology,
- Rural Society,
- Rural and Remote Health,
- Structure and Infrastructure Engineering,
- Waterbirds,
- Wetlands,
- Journal of the Society of Wetland Scientists,
- Wetland Science and Practice,
- Wildlife Research,
- Wine & Viticulture Journal,
- Zeitschrift für Unternehmensgeschichte,
- Zoology in the Middle East.

They also edited and produced books, book chapters (including for books they have edited), technical reports, ILWS reports and papers for conference proceedings.

A highlight would have to be the publication of the two-volume The Wetland Book, Springer Publishers, Dordrecht. Essentially an encyclopedia of the world’s wetlands, it was more than eight years in the making. Book 1 has 292 chapters and 2238 pages; Book 2 has 292 chapters and 2142 pages. Professor Max Finlayson is the lead author of both volumes. Fellow editors include Institute Adjuncts Professor Nick Davidson, Rob McInnes, Randy Milton and Dr Anne van Dam.

A selection of publications follows. A more detailed publication list can be found on the Institute's web site.

**JOURNAL ARTICLES**


Dionigi, R. A. (2017) I would rather die than live sedentary: Is the demonization of passive leisure creating a future generation of older people who will not accept inactivity? Topics in Geriatric Rehabilitation


KC, B., Wang, T. & Gentle, P. (2017) Internal migration and land use and land cover changes in the middle mountains of Nepal, Mountain Research and Development


Mekong Fish Passage Conference: Applying innovation to secure fisheries productivity. Ecological Management and Restoration


Rourke, M.L., Robinson, W., Baumgartner, L.J., Doyle, J.,


Ward, W. & Given, L. (2017) Assessing technologies for information sharing in international research teams: Developing an intercultural heuristic evaluation tool. *Proceedings of the Association for Information Science and Technology*


Znidarsic, E. (2017) Camera traps are an Effective Tool for Monitoring Lewin’s Rail (*Lewinia pectoralis brachipus*). *Waterbirds*

BOOK CHAPTERS


BOOKS


Images

1. Associate Professor Rylee Dionigi at the launch of her book

2. Professor Max Finlayson at the launch of The Wetland Book 1: Structure and Function, Management and Methods and The Wetland Book 11: Distribution, Description and Conservation at the Fish Passage 2018 conference.
SNAPSHOTS

Images

1. (left to right) Visiting PhD student from Brazil Eduardo Brambilla, Dr Katie Doyle, Dr Nathan Ning and Jarrod McPherson
2. PhD student Helenna Mihailou with a masked finch
3. (left to right) Associate Professor Dale Nimmo, Dr James Van Dyke, Dr Damian Michael, Dr Maggie Watson and Dr James Turner
4. Associate Professor Rosemary Black in Myanmar
ILWS REPORTS

2017


103. Spennemann, D.H.R. Feeding the pigeons: Documenting a cosmopolitan meme on contemporary postcards

104. Spennemann, D.H.R. The Japanese short-barrelled 12cm and 20cm dual purpose naval guns. Their technical details, wartime distribution and surviving examples

105. Strong, S., Allan, C., Finlayson, M. Biocultural knowledge of aquatic resources in the Murray River Region: Developing a draft inventory. A report for Murray Local Land Services

106. Spennemann, D.H.R. Inventing, innovating and investing: Biographical notes on the French inventor of galvanised iron, Stanislas Tranquille Modeste Sorel (1798–1876)


109. Ollerton, J., Black, R. Planning for social inclusion in playspaces: An evaluation of Livvi’s Place, Port Macquarie

2018

110. Spennemann, D.H.R. Turk’s Head at the Union Bridge - From licenced hotel to regional museum

111. Spennemann, D.H.R. Conservation management plan for the Turk’s Head building, Albury, NSW

112. Silva, L., Kopf, S., Mabon, S., Horta, A., Duffy, D., Ning, N. Finding forgotten fishes, the search for two endangered species in the NSW Murray Catchment

113. Spennemann, D.H.R. Nineteenth century depictions of the Canary Date Palm (Phoenix Canariensis). A visual dataset

114. Silva, L., Pearce, L., Mabon, S., Horta, A., Kopf, S., Ning, N., Baumgartner, L. Macca’s in the Manus, Macquarie perch refuge in the Upper Murray

115. Mitchell, M., Allan, C. Murray Region Community-based Groups Capacity Needs Assessment: Results of the 2016-2017 baseline survey for Murray Local Land Services


120. Spennemann, D.H.R. An experimental evaluation of food preferences and associated hatching times of the date stone beetle, Coccotrypes dactyliperda (Scolytinae, Coleoptera).


122. Mehment, M., Nayeem, T. Equally Well Digital and Social Media Marketing Communication Plan


* Electronic versions of most of these reports can be sourced from the Institute’s Website.
Many of our members hold positions on advisory boards and committees, statutory panels and industry/professional/community organisations and, as such, contribute their knowledge and expertise to decisions and policy-making. Our members also have editorial roles on journals.

<table>
<thead>
<tr>
<th>Members</th>
<th>External Appointments &amp; Memberships</th>
<th>Editorial roles on journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Max Finlayson</td>
<td>Scientific and Technical Review Panel of the Ramsar Convention on Wetlands (2016-2018) (Scientific expert member); Ramsar Chair for the Wise Use of Wetlands, UNESCO-IHE, The Institute for Water Education, Delft, The Netherlands; 12th International Lake Environment Committee (ILEC) Scientific Committee (member); Lake Cowal Foundation’s Board of Directors (independent scientific member); IUCN Commission for Ecosystem Management (member); International Crane Foundation (member of Board of Advisors); Sydney Olympic Park Authority, Wetland Education and Training (WET) (panel member); Winton Wetlands Management Committee’s Environmental Strategy Advisory Panel (chair); Society of Wetland Scientists, President Elect 2018-2019; Visiting Research Professor, Institute for Wetland Research, Chinese Academy of Forestry, Beijing, China; Independent Scientist, Cowal Gold Operation, Community Environmental Monitoring &amp; Consultative Committee</td>
<td>Marine &amp; Freshwater Research (Editor-in-Chief)</td>
</tr>
<tr>
<td>A/Prof Catherine Allan</td>
<td>Albury Conservation Company Ltd (Board member)</td>
<td>Marine &amp; Freshwater Research (Associate Editor)</td>
</tr>
<tr>
<td>Dr Lee Baumgartner</td>
<td>Australian Society for Fish Biology (NSW Representative); American Fisheries Society (member); Association of Power Biologists (member); Fish Passage Task Force (member); Murray Cod Fishery Management Group (member); International Energy Agency Fish and Hydropower Annexe (member); IUCN Freshwater Fish Specialists Group (member); North East Catchment Management Authority (board member); NSW Environmental Trust Aquatic Sub-Committee (member); International Conference on River Connectivity (Chair)</td>
<td>Journal of Aggression, Conflict and Peace Research (Editorial Board Member)</td>
</tr>
<tr>
<td>A/Prof Maree Bernoth</td>
<td>Executive Committee member of the NSW Division of the Australasian Association of Gerontology; Scientific Committee of the 2019 AAG National Conference; NSW Nurses Association Aged Care Advisory Board; Murrumbidgee Primary Health Network Aged Care Consortium</td>
<td>Journal of Criminological Research, Policy and Research (JCRPP) (Editor-in-chief)</td>
</tr>
<tr>
<td>Dr Philip Birch</td>
<td>The NSW National Parks &amp; Wildlife Service, North Coast Regional Advisory Committee, (Ministerial appointment); Global Sustainable Tourism Council (member of Board of Directors); Guiding Organisations of Australia (GOA) (Interpretation Australia and Oceania World Federation of Tourist Guide Associations representative); NSW National Parks and Wildlife Service State Council (Ministerial appointment)</td>
<td>Journal of Ecotourism (Editorial Board Member)</td>
</tr>
<tr>
<td>A/Prof Rosemary Black</td>
<td></td>
<td>Journal of Interpretation Research (Editorial Board member)</td>
</tr>
<tr>
<td>Members</td>
<td>External Appointments &amp; Memberships</td>
<td>Editorial roles on journals</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Prof Oliver Burmeister</td>
<td>Riverina Headspace Consortium, CSU representative; Australian Computer Society (ACS), Committee on Computer Ethics; International Federation of Information Processing, Technical Committee 9 ‘ICT and Society’ (TC9), Australian (ACS) representative; Australian Computer Society (ACS) Ethics Committee, Member and immediate past Chair; ACS Profession Advisory Board, Member; Western Regional Advisory Council on Multiculturalism (Community Member)</td>
<td>Journal of Information, Communication &amp; Ethics in Society (Editorial Advisory Board); Australasian Journal of Information Systems (Section Editor); Australian Journal of Rural Health (Associate Editor)</td>
</tr>
<tr>
<td>Dr Belinda Cash</td>
<td>Australian Association of Gerontology Student and Early Career Group (President)</td>
<td>Salus Journal (Co Deputy Editor)</td>
</tr>
<tr>
<td>Dr Emma Colvin</td>
<td>Committee of Management, Australian and New Zealand Society of Criminology, (Member and Newsletter Editor)</td>
<td>Rural Society (Associate Editor)</td>
</tr>
<tr>
<td>Dr Andrea Crampton</td>
<td>Qatar National Research Fund (expert reviewer)</td>
<td>BUITEMS Journal of Social Sciences and Humanities (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Richard Culas</td>
<td>Council of Australian Law Deans (Treasurer); West Bathurst Pre-school Inc Committee of Management (Secretary); and on the Council of Australian Law Deans Working Party on Indigenous Cultural Competence in Law Curriculum</td>
<td>Current Issues in Criminal Justice (Editorial Board member)</td>
</tr>
<tr>
<td>A/Prof Alison Gerard</td>
<td></td>
<td>Agenda (Associate Editor); International Journal of Sport and Society (Associate Editor); Energy Journal (Associate Editor); Economic Papers (Associate Editor)</td>
</tr>
<tr>
<td>Professor John Hicks</td>
<td></td>
<td>International Journal of Sociology of Agriculture and Food (Co-editor); Rural Society (Editorial Board member)</td>
</tr>
<tr>
<td>A/Prof Vaughan Higgins</td>
<td>International Rural Sociological Association (Australasian and Pacific representative)</td>
<td>Geoderma (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Ana Horta</td>
<td>Pedometrics Advisory Group 2014-2018, Pedometrics Commission of the International Union of Soil Sciences (member); Medal Committee of the International Spatial Accuracy Research Association (member)</td>
<td></td>
</tr>
<tr>
<td>Dr Jonathon Howard</td>
<td>Inland Rivers Network (Board member since 2015); Albury City Council Sustainability Advisory Committee (Member)</td>
<td></td>
</tr>
<tr>
<td>Dr Julia Howitt</td>
<td>Australian Institute of Nuclear Science and Engineering (CSU Council member)</td>
<td></td>
</tr>
<tr>
<td>Dr Xiaodi Huang</td>
<td>South China Normal University (Distinguished Professor)</td>
<td>Advances in Information Sciences and Service Sciences (Editor); Journal of Communications and Information Sciences (Editor); International Journal on Advances in Intelligent Systems (Editorial Board member); CAAI Transactions on Intelligence (Editorial Board member); PLOS one (Editor)</td>
</tr>
<tr>
<td>Dr Paul Humphries</td>
<td></td>
<td>Salus Journal (Associate Editor)</td>
</tr>
<tr>
<td>Dr Val Ingham</td>
<td>NSW-ACT PEN (Promoting Excellence Network) funded by the Office of Learning and Teaching (OLT) (CSU representative 2012/15); Generic Emergency &amp; Disaster Management Standards (GEDMS) (steering committee member); Research Committee 39 - The Sociology of Disasters (RC39), and the International Sociological Association (member); International Association of Emergency Managers (IAEM) (member)</td>
<td></td>
</tr>
<tr>
<td>Dr Keller Kopf</td>
<td>American Association for the Advancement of Science (Member); Australian Society for Fish Biology (Executive council NSW Representative)</td>
<td></td>
</tr>
<tr>
<td>Dr Zhenquan Li</td>
<td>Society for Industrial and Applied Mathematics (Member); Australian Mathematical Society (Member); American Society of Thermal and Fluids Engineers (Member)</td>
<td></td>
</tr>
<tr>
<td>Prof Gary Luck</td>
<td>Ecological Society of Australia (Council member); Ecosystem Services Experts Directory (Member); Australian Research Council (Oz Reader)</td>
<td>Faculty 1000 Research (Editorial Board member); Nature Conservation Journal (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Jessie Lymn</td>
<td>Australian Society of Archivists (Council Member)</td>
<td></td>
</tr>
<tr>
<td>Members</td>
<td>External Appointments &amp; Memberships</td>
<td>Editorial roles on Journals</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dr Melanie Massaro</td>
<td>Australasian Seabird Group (part of Birdlife Australia) (Treasurer); Australian Evolution Society (Member); International Society for Behavioural Ecology (Member); Australasian Society for the Study of Animal Behaviour (Member); Yelloweyes Penguin Trust, New Zealand (Member)</td>
<td>Austral Ecology (Associate Editor)</td>
</tr>
<tr>
<td>Dr Dianne McGrath</td>
<td>Chartered Accountants Australia and New Zealand; CPA Australia (Fellow); Australian Institute of Management (Member); Accounting &amp; Finance Association Australia and New Zealand (Member and Treasurer of Education Special Interest group); Centre for Social and Environmental Accounting Research (Member)</td>
<td>Accounting Education (Associate Editor)</td>
</tr>
<tr>
<td>Dr Joanne Millar</td>
<td>International Association for Society and the Commons (Member); Asian Studies Association (Member); Timor Leste Studies Association (Member)</td>
<td>International Journal of Agricultural Sustainability (Editorial Board member); Mountain Research and Development (Editorial Board member); Extension Farming Systems Journal (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Michael Mitchell</td>
<td>Friends of Nail Can Hill (Coordinator)</td>
<td></td>
</tr>
<tr>
<td>Dr Dale Nimmo</td>
<td>Ecology Society of Australia (Member) ESA Jill Landsberg Trust Fund Scholarship (Panel Chair) ESA Hot Topics Editor</td>
<td>People and Nature (Associate Editor)</td>
</tr>
<tr>
<td>Prof Kevin Parton</td>
<td>Australian Agricultural and Resource Economics Society (Member)</td>
<td>Journal of Nonprofit and Public Sector Marketing (Reviewer); British Food Journal (Reviewer); International Journal of Logistics (Reviewer); International Journal of Logistics Management (Reviewer)</td>
</tr>
<tr>
<td>Prof Manohar Pawar</td>
<td>International Consortium for Social Development Asia-Pacific Branch (President); International Consortium for Social Development (President-Elect)</td>
<td>International Journal of Community and Social Development (Editor-in-Chief); International Social Work (Editorial Board member); South Asian Journal of Participative Development (Editorial Board member); Prime University Journal of Multidisciplinary Quest (Editorial Board member); Journal of Humanities and Social Sciences (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Jodi Price</td>
<td>Ecology Society of Australia (Board member)</td>
<td>Plant Ecology (Associate Editor); Journal of Vegetation Science (Associate Editor)</td>
</tr>
<tr>
<td>Dr John Rafferty</td>
<td>Australian Association for Environmental Education (Vice President)</td>
<td>Higher Education Studies (Reviewer); Australian Journal of Environmental Education (Reviewer)</td>
</tr>
<tr>
<td>Dr Angela Ragusa</td>
<td></td>
<td>Rural Society (Editor-in-Chief); Information Resource Management Journal (Editorial Review Board member); Open Communication Journal (Editorial Advisory Board member)</td>
</tr>
<tr>
<td>Prof Linda Shields</td>
<td>Australian College of Children and Young People’s Nursing (Life member); Australian College of Nursing (Fellow); Australian College of Nursing (Board of Directors); Association for the Wellbeing of Children in Healthcare (Board of Directors); TJ Ryan Foundation (Board of Directors)</td>
<td>Journal of Child Health Care, Nursing Children and Young People (Editorial Board member); Nordic Journal of Nursing Research (Editorial Board member); Comprehensive Children and Adolescent Nursing (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Luiz Silva</td>
<td>International Energy Agency – Annex XIII Fish and Hydro-power Committee (Member)</td>
<td>Marine and Freshwater Research (Associate Editor)</td>
</tr>
<tr>
<td>A/Prof Peter Simmons</td>
<td>Australia and New Zealand Communication Association (Member); International Society of Justice Researchers (Member); International Association Media Communication Research (Member); International Communication Association (Member); International Environmental Communication Association (Member)</td>
<td></td>
</tr>
<tr>
<td>Members</td>
<td>External Appointments &amp; Memberships</td>
<td>Editorial roles on Journals</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>A/Prof Dirk Spennemann</td>
<td>Historic Preservation, Republic of the Marshall Islands (Special Advisor to the Advisory Council); The Historic Preservation Office, Republic of Palau (Technical Advisory Board Member); Australia ICOMOs (Member); Association of Professional Futurists (Member)</td>
<td>Campus-wide Information Systems (Associate Editor); Disaster Advances (Editorial Board member)</td>
</tr>
<tr>
<td>Dr Peter Spooner</td>
<td>Infra Eco Network of Europe (Member); Ecological Society of Australia (ESA) (Member); Murray LLS Travelling Stock Reserve Steering Committee (Member); IALE Historic Ecology Working Group (Member); NSW Local Government Council Roadside Reserves Advisory Committee (Member)</td>
<td></td>
</tr>
<tr>
<td>Dr Rik Thwaites</td>
<td>Indigo Shire Environmental Advisory Committee (Member); Cape Otway Conservation Ecology Centre (Board member)</td>
<td></td>
</tr>
<tr>
<td>Dr Oliver Villar</td>
<td>Latin America Social Forum (LASF), Sydney (Member); Latin American House Inc. Sydney (Member)</td>
<td>Rural Society (Reviewer); Journal of Labor and Society (LANDS), (Reviewer)</td>
</tr>
<tr>
<td>Dr Skye Wassens</td>
<td>River Red Gum Adaptive Management Science Advisory Committee (Member) (cross border NSW and Victoria); NSW OEH/DSE; Technical Advisory Panel (TAP) BHP Billiton’s Litoria aurea Compensatory Habitat Program (CHP) as part of the Hunter River Remediation project (Member)</td>
<td></td>
</tr>
<tr>
<td>Prof David Watson</td>
<td>New South Wales Scientific Committee (Ministerial appointment-resigned June 7, 2018); Technical Advisory Group (Member) for the Great Western Woodlands Project (jointly managed by Birdlife Australia and the Nature Conservancy); The National Threatened Bird List Committee (Member); Slopes to Summit Partnership (regional hub of the Great Eastern Ranges Initiative)(Founding member and senior ecologist); Wirraminna Environmental Education Centre (Member of the management committee)</td>
<td>Austral Ecology (Associate Editor)</td>
</tr>
<tr>
<td>Dr Maggie Watson</td>
<td>Board of Petaurus Education Group Inc. (Public officer); Wirraminna Environmental Education Centre (Member of the management committee)</td>
<td>Book Reviews editor for Ecological Society Australia’s journals Austral Ecology and Ecological Management and Restoration</td>
</tr>
<tr>
<td>Prof Robyn Watts</td>
<td>Edward-Wakool Environmental Water Group (Member); Murray and District Dissolved Oxygen Group (Member); Edward-Wakool Operations Advisory Group (Member); Australian Society of Limnology (Member); Australian Ecological Society (Member); International Society of River Science (Member)</td>
<td>Guest Editor Environmental Management special issue ‘Adaptive management of environmental water’ (2018)</td>
</tr>
<tr>
<td>A/Prof Rachel Whitsed</td>
<td>Australian College of Environmental Deans and Directors (Member); the Australasian Spatial Information Education and Research Association (Member); Spatial Accuracy (Steering Committee member)</td>
<td></td>
</tr>
</tbody>
</table>

*Thank you to the ILWS members, staff, staff, colleagues and partners who provided images used in this report.*