

THE LIFE AND TIMES OF LA TROBE'S DEPARTMENT OF ENVIRONMENTAL MANAGEMENT and ECOLOGY: A REFLECTIVE REVIEW*

*In association with La Trobe 50th Anniversary celebrations.

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ABOUT THE AUTHORS



John Hill came to DEME in mid-1994 having spent 20 years in the Department of Chemistry at the Melbourne Campus and 4 years as a Senior Teaching Fellow in Chemistry at the National University of Singapore. His environmental science interests included 'pollution control', 'green chemistry' and 'renewable energies' and the principles and practices of Sustainable Natural Resource Management and along with 'chemical education', he has pursued these interests in retirement.



Phil Suter joined DEME in 1996 when the BSc in Environmental Management and Ecology began teaching second and third year students. Phil had spent over 15 years developing practical experiences in the areas of environmental monitoring, water resource management and

environmental protection within the public sector. He has maintained his interest in integrating research with practical management, although he is internationally recognised as an expert in the taxonomy and systematics of Australian *Ephemeroptera* (mayflies), an area which he continues to develop in retirement.

PROLOGUE

The Department of Environmental Management and Ecology (DEME) was founded in 1991 with first year science teaching feeding into the Bachelor of Biological Sciences degree at the Melbourne campus. A Graduate Diploma in Environmental Management was also offered at this time. From this foundation, a unique full science degree was subsequently established at the Albury-Wodonga campus (Bachelor of Environmental Management and Ecology). Throughout the Graduate Diploma and the new degree courses, the basic principles of 'management of the environment' and 'sustainable development', as defined by the UN Resolution on 'Sustainable Development' - stated as 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs, coupled with an awareness as to how sustainable development can be achieved by 'economic growth', 'social inclusion' and 'environmental conservation', were all addressed. We have attempted to show in this review how these broad principles of sustainable development have underpinned and informed the teaching, learning and research of DEME from inception so that it is, albeit in hindsight, regarded as one of the leading departments of its kind in Australasian academia and thus has a record to be proud of and worthy of formal and lasting recognition.

OVERVIEW, INFRASTRUCTURE and RESOURCES

The Wodonga campus of La Trobe came into being in 1991 following a merger of the University with the Wodonga Institute of Tertiary Education (WITE) established in 1989. The guiding principle and rationale for the new regional campus of La Trobe was to provide quality higher education to those from local communities, which in practical terms meant that Albury-Wodonga students could undertake a full 3-year degree course locally, which would be equivalent to a similar course offered at the main campus in Bundoora. This admirable vision created many immediate challenges in terms of infrastructure and facilities, since although the campus had a 26 ha 'greenfield site' in west Wodonga adjacent to Wodonga Institute of TAFE (WIOT), there was no buildings thereon and so the campus did not have an identifiable physical presence. This lack of a physical identity was not the only impediment to the establishment of the Wodonga campus. It was well known in the region that Charles Sturt University had a developing campus already established at Thurgoona, some 5 km NE of Albury and also had a city centre presence at which some of its courses were delivered. In addition, successive Albury City Councils had enthusiastically embraced CSU and had accorded Albury 'University City' status. By contrast, it was never envisaged that the La Trobe Wodonga campus would have a city presence and its close alignment with WIOT in the early years gave the impression to the local community that it was in fact just an extension of 'the TAFE'. It was a lingering frustration that successive Wodonga Councils did little to alleviate this community impression and showed reluctance to credit Wodonga as a 'University City', instead opting to label it as a 'Learning City' in the 1990's embracing La Trobe University, WIOT and Wodonga Community College. Although the image of La Trobe in Wodonga has improved over the 27 years of its existence, it still does not enjoy the

same status in the local community as does its counterpart 'across the river'. Competition for enrolments by the two border universities in 'Business', 'Nursing', 'Psychology' and to some extent 'Environmental Management' was also an impediment. Fortunately the environmental management course offered by CSU was aligned with 'park ranger' training rather than management of the environment based on knowledge of scientific principles.

Despite being well aware of these initial impediments, the University established five 'foundation' departments/divisions: Business, Community Social Science, Environmental Management and Ecology (DEME), Psychology and Nursing. These were aligned with the Faculties of Law and Management (FLM), Humanities and Social Sciences (HUSS), Science, Technology and Engineering (FSTE) and Health Sciences (FHS), respectively. The Nursing Division was accommodated in WIOT and the other four units were accommodated on the upper level of 'The Glass House' (1 McKoy Street), which was formally the headquarters of the Albury-Wodonga Development Corporation and latterly, the headquarters and distribution centre of the 'Border Mail.' In addition, La Trobe made an agreement with WIOT to share its library facilities and it established an annex on the WIOT campus to accommodate the Head of Campus office suites, a meeting/conference room and a campus book shop. Initially the science programme presented by DEME was for first year only with students progressing to the Bundoora campus to complete their science degree. To facilitate this programme, the University rented lecture theatre and science laboratories from WIOT to service the requirements of DEME relating to delivery of its Year 1 courses. It also provided a 'portable' situated on the WIOT campus to meet the needs of DEME in relation to its research laboratory needs. La Trobe also had a stake in the limited number of on- site student accommodation units on the WIOT campus which were managed by the latter on a pro-rata basis and the student amenities centre (known as 'The Hangar') was jointly owned by La Trobe and WIOT. Thus, in large part, the initial infrastructure of the Wodonga campus was WIOT based but constructive cooperation between the two institutions allowed La Trobe to develop its master plan for an independent campus to progress expeditiously.

In mid-1995, the physical identity of the campus became a reality with the completion of two (foundation) buildings on the McKoy St. site – Building 3 (Teaching Building) and Building 4 (Academic Building). The latter was to later to be named 'The Michael J. Osborne Building' to honour the efforts of the Vice Chancellor of the period to establish regional campuses. Subsequent to the move from 'The Glass House' to Building 4 on the new campus, DEME was accommodated on the ground floor and in addition to staff and higher degree student offices, had a purpose built, spacious research laboratory with adjacent preparation facilities to supply and service field excursions. Faculty funding was made available for provision of essential equipment such as microscopes for this laboratory and later a UV/VIS spectrophotometer was added. Subsequently, DEME was provided with a storage facility located on the campus perimeter for storage of boats, nets and other large bulky items required for the diverse range of field excursions (both undergraduate and graduate) which it supported. Building 6 (Health Sciences and the Main Lecture Theatre) came into existence in the late 1990's and the magnificent two-level David Mann Library opened in 2002. The latter was named in honour of David Mann (1928 – 2012), who was a founding member of Wodonga Campus Regional Advisory Board and sponsor of the Jonathon Mann Memorial Lecture series which he established to pay tribute to his grandfather who was a pioneer of a movement to preserve the Murray River for the benefit of future generations. In the early 2000's, 'Building 8' became a reality and accommodated mainly the Murray Darling Freshwater Research Centre (MDFRC) but also, two science laboratories were allocated to DEME to address its need for facilities for Year 1 science laboratory teaching. This building was

subsequently named 'The Nancy Millis Building' to honour the La Trobe Chancellor of the period and Chair of the MDFRC Board and who, in addition, was also a world authority in microbiological research. Post 2005, some additional (portable) teaching facilities were provided adjacent to Building 3 along with some long-awaited 'on campus' student accommodation. A campus coffee shop aptly named 'The 3 Degrees' and an on-site COOP Book Shop also emerged. During this period, the student amenities centre – 'The Hangar' was upgraded and extended to include gymnasium facilities and a most welcome bar facility.

In 2000, negotiations commenced between La Trobe and CSIRO to relocate the Murray Darling Freshwater Research Centre (MDFRC) from Charles Sturt University-Thurgoona to the Wodonga Campus. With the major proportion of the necessary funding being provided by the University and supplementary funding supplied by the Commonwealth, CSIRO and Wodonga City Council, a purpose-built, state-of-the-art facility (Building 8) was constructed to effect this relocation in February, 2003. Since MDFRC is the main source of scientific data on the 'health' of the Murray Darling ecosystem which informs and influences policies of the Murray Darling Basin Authority, this relocation was a major coup for La Trobe and a boost for the Wodonga campus, both in terms of enhancing its overall image and its community collaboration and outreach profile. It was of particular importance to DEME, since it facilitated collaborative research projects in conjunction with co-supervision of honours and higher degree students.

Perhaps a unique feature – and many would argue – a defining feature of the Wodonga campus was the marquee set up initially on the WIOT campus and later on the Ceremonial Lawn of the McKoy St. campus to accommodate the annual Graduation Ceremony which was held in March. This practice had to be discontinued from 2001 due to OH&S concerns for public safety in addition to the possibility of inclement (hot) weather and these ceremonies have since been held in the McAuley Arts Centre of Wodonga Catholic College.

Facilities for staff and students of the new Wodonga campus from 1995 onwards up until about 2000 again relied on cooperation with WIOT. La Trobe students had access to all TAFE facilities including 'The Hangar', the cafeteria, the child-minding centre and the (TAFE) library. Also, key student services such as 'accommodation allocation', 'counselling' and 'financial services' were provided by WIOT. Campus security services and mail distribution was also provided by WIOT.

However, after five years of its physical presence, 'Wodonga' was a fully functional self-sufficient regional campus of the University – offering not only a wide variety of courses relevant to 'local community needs' but essential services such as student administration, on-line study centres, academic skills unit, English/second language (ESL) assistance, counselling, indigenous support and chaplaincy were fully operational and the addition of the David Mann Library in 2002, essentially gave the campus 'university appearance and status'. However, although it had demonstrated its viability albeit with hidden financial restraints and enacted its regional mission, it was yet to be fully accepted and integrated into the Albury-Wodonga community and it had to work hard to continue to be relevant, viable and attractive in an ever-changing and evolving higher education environment.

The ultimate measure of the quality of an institution is not only based on the quality of its infrastructure but also on the quality of its staff. In this respect, it is apparent on reflection that Wodonga campus was blessed with dedicated staff, both academic and support staff, who embraced the ideals of creating a viable teaching and learning environment so as to give students

the best opportunities for advancement. It is important to note that a high percentage of students at the Wodonga campus have been the first members of their families to attend university and also many are mature age students. These students typically require considerable assistance to adapt to a higher education environment and many have additional emotional and disability needs. In general, Wodonga staff have continuously dealt effectively with these special needs of students and thus Wodonga campus has widely been recognized as a 'student friendly' environment and the relatively small 'class numbers' have translated to students receiving individual attention throughout their course of study.

In this context, La Trobe appointed a group of highly qualified foundation academic staff most of which had a PhD as a primary qualification, thereby establishing a platform for future supervision of higher degree students. These staff were Dr. Roger Croome (Reader – later designated Associate Professor), Dr. Gerry Closs, Dr. Susan Lawler and Dr. Percival Thomas (Lecturers). In addition, Peter Taylor was appointed as Assistant Lecturer and Gertrude Hotzel as a Research Associate working with Roger Croome and funded by the Land and Water Research Development Corporation. In addition, WIOT adjunct staff were appointed on an annual basis to deliver some Year 1 courses: Karen Stacey, Yvonne Greenhall and Michelle Draper (Science Laboratory Supervisors): Michael Murphy, initially followed by Gordon Aisbett (Chemistry), Ian Lack (Mathematics) and John Hills (Statistics).

Subsequent DEME appointments were Dr. Dennis Black (1990), Dr. John Hill (Reader/Associate Professor) (1994), Dr. Cath Meathrel (Lecturer) (1995), Dr. Phil Suter (Lecturer), Dr. Helen Wallace (Lecturer) (1996), Dr. Peter Pridmore (Lecturer) (1998), Martin Fussell (Lecturer) (1999), Dr. Warren Paul (Lecturer) (2003), Dr. Ewen Silvester (Senior Lecturer) (2003) and Dr. Alexei Rowles (Lecturer) (2013). Nick May was appointed to the long overdue laboratory technician position in (2004) to manage the newly established science teaching laboratories in The Nancy Millis Building. During their careers, Susan Lawler, Ewen Silvester and Phil Suter were promoted to Associate Professor.

Gerry Closs and Helen Wallace resigned in 1997 to take up a lectureship position in zoology at Otago University, Dunedin, NZ and the University of the Sunshine Coast, respectively. Percy Thomas resigned in 2002, Peter Taylor resigned in 2003, Roger Croome retired in 2009 and Phil Suter retired in 2013. John Hill was appointed PVC/Head of (Wodonga) campus from mid-2000 to the end of 2005 and retired in early 2006. As a result of a 'University restructure', Dennis Black, Martin Fussell and Peter Pridmore were made redundant at the end of 2014. From 2015 onwards, Susan Lawler, Ewen Silvester, Warren Paul and Alexei Rowles were absorbed into the new Department of Ecology, Environment and Evolution/School of Life Sciences/College of Science, Health & Engineering. Post retirement, John Hill was awarded Emeritus Professor status and Phil Suter was awarded Emeritus Scholar status in recognition of their outstanding record of commitment to teaching and learning, research and service to the University during their tenure.

Over its lifetime, DEME had four Heads of Department: Roger Croome (1991 to 1997), John Hill (1998 to mid-2000), Roger Croome (mid-2000 to 2002), Phil Suter (2003 - 2009) and Susan Lawler (2009 to 2014). Over the same period, there were five Administrative Assistants: Fiona Kucha, Pam Tough, Isobel Verecondi, Helen Eyre and Rachel Gorman.

From 2003 onwards, DEME was augmented and enriched by the presence of MDFRC on the Wodonga campus which was an affiliate of CSIRO founded in 1986 with David Mitchell as its

first Director. He was succeeded by Terry Hillman in 1994 and then by Ben Gawne in 2002. Terry Hillman had a crucial role in planning and procuring funding for the relocation of MDFRC to La Trobe - Wodonga. At that time he was Chair of the Wodonga campus Regional Advisory Board and was an Honorary Professor of the University in addition to being an 'Honorary Associate' in DEME. Also, he was awarded an Honorary DSc by La Trobe in 2003 for his research into the sustainability of the Murray-Darling ecosystem. The senior MDFRC personnel who relocated to the Wodonga facility included Ben Gawne (Director), Dr. Darren Baldwin, John Hawking, Dr. Paul Humphries, Dr. Daryl Nielson, Dr. Rod Oliver, John Pengelly, Dr. Gavin Rees and Garth Watson. MDFRC had an extensive specialized library of textbooks, journal runs and specialist reports which was amalgamated with the collections of the David Mann Library. Estelle Oliver, who managed the MDFRC library, subsequently transferred to DML staff. Rosie Busuttil and Rhonda Sinclair continued as Administrative Assistants in MDFRC post relocation.

Over the subsequent decade, MDFRC suffered the effects of 'downsizing' resulting from reduced Commonwealth funding of CSIRO and several of the staff who had moved to the Wodonga facility were made redundant. However, in recent years, MDFRC staffing has increased. Its present Director is Professor Nick Bond and the current senior staff are: Ben Gawne (Part-time), Dr. Paul McInerney, Dr. Daryl Nielson, John Pengelly, Dr. Amina Price, Dr. Gavin Rees, Dr. Michael Shackleton, Dr. Rick Stoffels, Garth Watson and Kyle Weatherman. Rachel Gorman is currently 'Centre Manager'.

In terms of infrastructure and human resources, DEME was established on 'firm foundations' despite not having a dedicated physical location until 1995. However, student numbers were never high enough to enable DEME to be financially sustainable. In the initial years, the Faculty of Science, Technology and Engineering (FSTE) subsidised the financial position of the Department but in the early 2000's, this financial responsibility moved to the School of Life Sciences, which then became responsible for the viability of DEME. So, although at this time, DEME had well-established degree and Graduate Diploma programmes together with steadily increasing Honours and Higher Degree enrolments, the on-going low student numbers in second and third year (less than 20) – in part due to the 'millennium drought years' (1997 – 2003), the financial resources of the School of Life Sciences continued to be stressed. Over the period 2013 – 14, the University unilaterally restructured in accordance with its signature 'Future Ready' plan, the core of which involved condensing the existing five faculties into two colleges: 'Science, Health and Engineering' (SHE) and 'Arts, Social Sciences and Commerce' (ASC). Since DEME had a long history of financial instability, it was, unfortunately, a casualty of this mega restructure. Despite highly credible quantitative evidence being put forward to support its viable future, it ceased to exist as of the end of 2014. As a consequence, the Wodonga campus was deprived of one of its well-established and highly regarded academic departments and no 3-year science degree courses have been offered at the campus since. The status and integrity of the Wodonga campus have inevitably diminished as a result of this loss and an era of excellence in tertiary science education at this campus has come to an abrupt end.

THE TEACHING and LEARNING PERSPECTIVE

Since the twin cities of Albury and Wodonga straddle the Murray River, the region and its communities both historically and currently have depended upon its preservation to establish a foundation for a sustainable future. Thus, it was opportune and appropriate for the University not

only to establish a foundation science program to feed biological sciences and chemistry courses at the Bundoora campus but also to present unique scientific offerings to the local community. To enact this initiative Roger Croome was appointed Reader and Head of (DEME) in 1991. Previously he had been a Senior Scientist in the Rural Water Commission and was a recognised authority on freshwater ecology and a specialist in blue-green algal blooms in lakes, rivers and streams. He was also well connected with many Government Agencies responsible for water and land management based in the Albury/Wodonga region. He had previously been involved with the Albury-Wodonga Development Corporation (AWDC) in assessing the impact of the rapid development of Albury-Wodonga region on the Murray River.

As an early initiative, he established a Graduate Diploma course in Environmental Management in 1993, which was designed for those seeking employment or who already were employed in the broad natural resources sector. Its aim was to provide graduates who can not only make sound management decisions which have beneficial consequences for the sustainability of the environment and for the quality of life in the region but also who can explain and justify these decisions within the local communities and particularly among the local indigenous communities. Entry requirements were 'flexible' in application, ranging from holding a degree or diploma in a relevant scientific or technological discipline or a qualification proven to be equivalent to a degree or diploma. In some cases, a demonstrated history of employment at an appropriate level in an area of environmental significance, was acceptable. This course was not offered unless the intake was 10 or greater.

This part-time (2 – year) course consisted of six units: 'The Australian Environment – Ecology and Conservation', 'Catchment Management', 'Waste Management', 'The Australian Environment – Legal and Sociological Aspects', 'A project/mini-thesis on a topic related to environmental management' plus a unit selected from 'Advanced Catchment Management', 'Advanced Waste Management' and 'Optional studies' – selected from a wide variety of courses offered at the Wodonga campus were compulsory components of the Graduate Diploma.

The coordinators of this course were Roger Croome and Percy Thomas who delivered the 'Ecology' and 'Waste Management/Catchment Management' lectures respectively. A wide variety of 'guest lecturers' gave presentations of their specialist topics. Assessment was by assignments, essays, reports and seminar presentations. A minor thesis of between 15 and 20000 words describing research on a selected topic was assessed by the supervisor. Throughout the course there were several 'field visits/demonstrations' conducted on weekends. Examples included 'catchment management strategies in the Ovens River basin: Ovens River levy scheme for reduction of flood risk in Wangaratta: Albury Water Treatment plant: management strategies of land-fill solid waste sites: observation and characterisation of algal blooms in local rivers and lakes and demonstration of water quality measurements. Over its 8 – year lifespan, 50 students graduated and these are listed in Addendum 1.

Also, in 1993, Roger Croome, as Head of DEME, provided evidence to the University that there was sufficient interest and support within the local community for the University to establish a full 3-year science degree at the Albury-Wodonga campus and thus a unique course BSc (Environmental Management and Ecology) was approved to be offered only at the Albury-Wodonga campus. This would not only provide a local three year undergraduate degree which addressed environmental issues relevant to the local community but would also provide an opportunity to address the very low tertiary entry from North East Victoria. Through this degree, the University would demonstrate its commitment to the local community that courses offered at

its regional campuses address 'local needs' and 'fill gaps' in their tertiary education profiles. Most importantly, the latter would allow for Honours and Higher Degree programmes to be co-established. Thus, DEME students could enrol in the Biological Sciences stream or in the Environmental Management and Ecology stream. The former would allow them to continue studies at the Bundoora campus from Year 2 onwards leading to a wide variety of science degrees, whilst the latter continued at the Wodonga campus in the Environmental Management programme. Based on his previous professional experience in freshwater management, Dr. Croome was ideally suited to design this unique degree course in environmental management based on ecological, conservational and sustainability premises and subsequent staff appointments, which included Dr. Gerry Closs, Percy Thomas, Dr. Phil Suter and Dr. Susan Lawler, Dr. Dennis Black and Dr. Cath Meathrel and their specialist interests in water ecology, waste management, biological monitoring and environmental law and conservation biology, respectively ensured that all the necessary courses and units for the environmental management degree course could be developed and delivered.

Offered initially in 1995 at both first and second year level, the BSc in Environmental Management and Ecology in Year 1 was a general biological sciences course consisting of eight subjects: 'Animal Diversity, Ecology and Behaviour', 'Organisation and Function of Cells and Organisms', 'Genetics, Human Biology and Evolution', 'Plant Science', 'Chemistry' and 'Statistics for the Life Sciences' plus two optional subjects selected from 'Applications of Chemistry', 'Physical Aspects of the Environment', 'Processes that shaped the Earth' and 'Earth Environments and Resources'. All of these subjects had common content with corresponding subjects delivered at the Bundoora (Melbourne) campus and also had common assessment procedures. It was fortunate that from the beginning, all these subjects except Geology were delivered by 'face to face' teaching. In addition, first year students enrolled at Albury-Wodonga Campus in the Biological Sciences and Environmental Management and Ecology degree courses were required to complete a first semester Chemistry unit, either Basic Chemistry (CHE1BAS) or General Chemistry (CHE1GEN). Basic Chemistry was designed for students who had not studied chemistry at the VCE or HSC levels or who had little or no prior exposure to chemistry. Students enrolled in General Chemistry were expected to have studied chemistry at year eleven or have completed year twelve studies in the subject. Within DEME the teaching of these subjects presented some problems as both of these subjects were taught as one cohort. In terms of content, teaching the combined groups did not pose difficulties since the two subjects covered the same topics and the assessment procedures were identical. However, it was recognised that the students who had little familiarity with chemistry in the past would need a bridging introduction that would enable them to begin their studies with some confidence and then maintain the pace with which the subject unfolded over the first semester. To meet this need, all students, particularly those enrolled in Basic Chemistry, were offered an intensive three day chemistry introduction in the week prior to the commencement of the first semester. The introductory lectures and tutorials covered essential chemistry concepts required to understand the more advanced concepts inherent in the Basic and General Chemistry courses. These basic chemistry concepts were reinforced over the first six weeks of lectures in General Chemistry, supplemented with additional tutorials which were conducted outside of the normal timetable at weekends. Via this lead-in' strategy, it was evident that all students commenced the Year 1 chemistry unit with the same level of 'basic' chemistry knowledge.

'Statistics for Life Sciences' was offered from 2002 to replace the mathematics units initially delivered by WIOT. This was an introduction to statistics and was compulsory for all

students continuing with the BSc in Environmental Management and Ecology. Similar to the Chemistry unit, many of the students had a very basic, if any, understanding of statistics and this course was specifically designed to reveal the importance of statistics to the units in Ecology which they would study in subsequent years.

Whereas all Year 1 science units at Wodonga had privileged teaching and learning delivery modes, 'Geology' was initially delivered by video tapes of lectures forwarded by Bundoora geology lecturers and one of these visited the Wodonga campus on a fortnightly basis to conduct tutorials with the geology group. The quality of these tapes was generally very poor and participating students complained of 'being disadvantaged' compared to their counterparts who received 'face-to-face' teaching. In later years, geology lectures were delivered 'live' from Bundoora via 'video-conferencing' but still participating students preferred 'face-to-face' teaching. From 1999, Martin Fussell delivered both Year 1 units of Chemistry and Geology and he also introduced a very enlightening field excursion for Geology students which was very well attended and received. As a result of his enthusiasm and commitment, geology enrolments markedly increased. From 2009, a new 'cross-campus' subject: 'Climate, Sustainability and Society' was offered as an option to students enrolled in DEME and Business. This course encompassed the economic, scientific and sociological aspects of climate change and environmental sustainability.

Year 2 of the Environmental Management and Ecology stream consisted of six units: 'Theoretical and Applied Ecology', 'Origin and Evolution of Australian Biota', 'Ecological Genetics and Evolutionary Ecology', 'Environmental Pollution Control', 'Water and Air Quality' and 'Biostatistics'. A wide range of environmental science principles and practices was addressed including: Overview of the Australian biophysical environment and the ecological principles which govern the response to environmental change and identification of the major environmental pollutants, particularly those associated with the hydrosphere, together with strategies which can be applied to promote their reduction. 'Biostatistics' built on the introductory unit in first year and it was designed to be more scientifically orientated with many examples taken from the natural environment. This unit was a major tool for the quantitative measurement of 'environmental health' and for future research at third, Honours and postgraduate years.

The Year 2 course was augmented and greatly enriched by several 'field excursions' which extended over 4 – 5 days: Mt. Buffalo and later Mt. Hotham – 'alpine ecology' theme – coordinated by Gerry Closs initially and later by Dennis Black and Ewen Silvester: 'Australian outback – arid zone ecology' theme – coordinated by Peter Pridmore, Dennis Black and Ewen Silvester and 'Healesville sanctuary' – 'conservation biology' – coordinated by Peter Pridmore. The Ecological Genetics and Evolutionary Ecology unit required each student to collect a taxonomic collection of a phylogenetically related group of animals or plants. All material was curated appropriately and this collection was assessed. In later years, a field-based excursion to the Strathbogie Ranges supported the Highlands Land Care group and produced a taxonomic report on the biodiversity of the area. The students also presented their results in written and verbal formats to the Land Care group. This excursion was coordinated by Susan Lawler. The 'Environmental Pollution Control' and 'Air and Water Quality' units also included field-based practicals which were linked to local pollution sources and their management. These field trips were undertaken within the practical schedule. All these field-based practical components were assessed individually with reports being prepared using standard scientific publication formats.

In 2012, DEME established a field-based unit to be offered to second and third year students within all science degrees at the University. This unit covered areas of terrestrial plant

and animal ecology, aquatic ecology, water chemistry and statistically-based experimental design. Students worked in groups and had to produce a written assignment on the areas in which they undertook experimental tasks. The main presenters included Ewen Silvester, Dennis Black, Peter Pridmore, Alexi Rowles and Phil Suter.

Year 3 of the Environmental Management and Ecology stream was first offered in 1996 and consisted of four units: 'Sustainable Resource Management', 'Waste Management and Treatment', 'Conservation Biology and Environmental Law' and 'Environmental Assessment'. The first of these units not only built on the basic principles of environmental management introduced in Year 2 but discussed 'new knowledge' derived from recent research on how the 'health' of catchments is assessed in terms of land and water usage and how catchments can be restored and rejuvenated in conjunction with realistic assessments of 'environmental sustainability'. The second of these units discussed factors that contribute to the production and accumulation of waste and identification of waste products in conjunction with basic principles of 'integrated waste management' leading to 'waste minimisation' via maximising 'recycling' strategies. 'Conservation Biology and Environmental Law' provided an understanding of natural resource management within an ecological context, by consideration of the following topics: conservation biology, identification and restoration of threatened ecosystems, management of invading or pest species, design of ecosystem reserves, single species and whole community conservation, managing community change and succession, environmental policy and legislation, the structure of environmental law in Australia and the management of renewable resources. 'Environmental Assessment' provided an understanding of the principles and practices of environmental impact assessment, concepts and principles of toxicology, risk analysis, hazard analysis, a practical 'Geographical Information System' (GIS) course, environmental audits and impact assessment studies. A ten-week work-placement (two days per week) equivalent to 160 hours in local industry was a compulsory component of this unit. Students worked as bone-fide employees of businesses associated with 'environmental management' such as water authorities, waste water treatment plants, catchment management authorities, local councils and Government departments such as the EPA and Ministry of Agriculture, all of which had facilities in the Albury-Wodonga region. This component was coordinated by Phil Suter.

The Year 3 course was augmented and greatly enriched by several extended 'field excursions': Werribee Waste Water Treatment plant – coordinated by Percy Thomas and Phil Suter; Philip Island – 'marine ecology' theme – coordinated by Cath Meathrel and Phil Suter and Dubbo Zoo – 'The role of zoos in conservation' theme – coordinated by Cath Meathrel. The Philip Island marine ecology practical was a group-based project with each group of 4-5 students working together in forming their hypotheses, determining appropriate methods to answer the questions and undertaking field collections, identification of fauna and flora and writing up a group collaborative scientific report which was assessed similar to a mini Honours thesis. The normal practicals included investigating the impact of urban development, dam operations and water quality changes in local streams and all were assessed.

This 3-year course provided a firm platform and a gateway to further study and thus DEME consistently had a strong annual Honours enrolment which led to an equally impressive higher degree enrolment. The Honours programme consisted of an initial literature review which was assessed, a series of theme-based lectures, a series of assessed assignments (2 to 3), a final seminar and a thesis. The thesis was assessed by an external examiner, often from within the School of Life Sciences, to maintain an equivalent standard across the school and an internal

examiner. If any conflict arose from these assessments, a third independent examiner was appointed. The thesis accounted for 70% of the final result.

A list of BSc Environmental Management and Ecology graduates and Honours graduates is given in Addendum 1.

The students within DEME had an advantage of small class sizes that enabled individual attention by academic and technical staff. The dedication of the lecturing staff at Wodonga meant that all students became known individually and had the opportunity to integrate into a bonded group of staff and students. The lecturers met their students on a daily basis, not only in formal lectures, tutorials and practical classes but also in the surroundings of the much smaller campus. Because of the small class sizes compared to those of the major campus in Melbourne, students felt at ease in asking questions and seeking advice and assistance both within and without formal contact sessions.

Although the DEME degree course was generally recognised as one of the most successful programmes offered at the Wodonga campus throughout its quarter-century history, from 2005 onwards, enrolments declined further due to a 'Conservation and Wildlife Management' course being established in the School of Life Sciences at the Bundoora campus, which attracted students interested in environmental management to the Melbourne campus at the expense of enrolments in the Bachelor of Science in Environmental Management and Ecology.

A number of sponsored awards, scholarships and prizes were made available to EME students in three categories: 'Campus-wide', 'Faculty based' and 'EME based'. The first category consisted of the 'La Trobe University Albury-Wodonga campus medal' – awarded to a high-achieving final year student who had made a significant contribution to the Albury-Wodonga community through study or extra-curricular activity: the 'Vice Chancellor's Undergraduate Scholarship', awarded to commencing students at a regional campus: the 'Albury City Community Leadership Prize', awarded to talented students from the Albury-Wodonga region who were studying at the Albury-Wodonga campus and who had demonstrated their commitment to campus life and community leadership, the 'Lisa Malone Scholarship', awarded to a student with evidence of commitment to social development in Australia or overseas and the 'Wodonga City Learning Award', awarded to a student residing in Wodonga who had demonstrated superior academic achievements and a demonstrated commitment to life-long learning.

'Faculty Prizes/Awards' consisted of the 'Dean's Medal' for the highest achieving EME student of the year and the 'Dean's Honour List' – the latter included students from each of the 3 years of study.

Numerous 'sponsored' EME scholarships and prizes were available – the most prestigious of these being the Albury City Student Scholarship – awarded to talented students from the Albury-Wodonga region who had studied at the Albury-Wodonga campus in DEME in their final year of study and who had demonstrated their commitment to the future of their chosen profession within the local community and the 'Hamilton-Smith Rotary scholarship for Environmental Studies' awarded to a student studying Year 2 of the BSc Environmental Management and Ecology. From 2003 onwards, the 'Hillman Scholarship' was available for LTU and CSU commencing Honours students whose project was based on 'freshwater' research. In addition, numerous corporate, commercial and community-sponsored student prizes were awarded annually, which reflected the collaboration and respect which these organisations had for DEME throughout its lifetime.

A list of awardees is given in Addendum 2.

From 2000 onwards, 'Teaching and Learning' became a major focus of the University's senior management team with the intent of enhancing student retention rates. A new position was created 'Pro-Vice Chancellor Teaching and Learning' along with each faculty appointing a Director of Teaching and Learning. Over succeeding years, many teaching and learning strategies were implemented University-wide. One of the more recent of these was initiated in 2008 whereby all curricula were redesigned to include a focus on 'Graduate Capabilities', aimed to provide graduates with a broader set of skills that would assist them to transition successfully into the workforce upon graduation. 'Graduate Capabilities' involved communication skills, incorporating above average competency in writing, speaking, numeracy and computing, independent thinking skills, incorporating confidence in inquiry after researching information, critical thinking and problem solving, teamwork and professional ethics. It was also recognised that there would be skills specific to a particular discipline that might need to be emphasized. Teams were formed within each Faculty to develop clear directions to assist all disciplines to incorporate the 'Capabilities' into their teaching curricula to a meaningful and substantial level and after much discourse, modification and refinement, the plan was rolled out in 2012. Martin Fussell should be highly commended for his role in redesigning DEME curricula to embrace incorporation of 'Graduate Capabilities' in this novel teaching and learning plan.

Simultaneously with the development of 'Graduate Capabilities' there was a directive for courses across the Faculty to embrace 'Blended Learning' teaching methods, the intent of which was to decrease the dependence of students on the 'time-honoured' inflexible system of timetabled lectures and to allow for more flexible online learning facilities. It was envisaged that when students had to become personally involved in developing their understanding of the subject content that their understanding would be more thorough than when sitting passively in lectures or indeed missing lectures altogether. Students would be required to access learning resources and activities at their leisure online at home or in computer laboratories that would substantially cover the content of the subject. It was incumbent upon subject coordinators to provide online 'essential content' material of a standard that would comprehensively substitute for attendance at lectures. In addition, a substantial part of the assessment program was also established through online learning tutorials and assignments. In DEME, considerable effort was made to ensure that students would continue to have access to lecturers either directly or through timetabled tutorials that would address particular difficulties. To allow students sufficient time to attend to online activities each week, lecture time and the amount of time spent in practical sessions was reduced. The overall student reaction to these new initiatives was 'mixed' but continued access to lecturing staff was highly praised.

In the context of raising the profile of 'teaching and learning' within the University, from 2005 onwards, the University introduced awards for lecturing staff for demonstrated excellence in teaching and learning. Susan Lawler won several of these awards, some of which had a monetary value: 2007, 'Dean's Award' for teaching excellence in the Faculty of Science, Technology and Engineering (\$2500); 2008, La Trobe University citation for 'Outstanding Contribution to Student Learning' for outstanding and sustained teaching that engages, motivates and inspires student enthusiasm in genetics, evolution and conservation; 2008, 'Vice Chancellor's Award for Teaching Excellence' for a strong record in curriculum development and an outstanding record as an inspiring class teacher (\$5000); 2008, Citation for 'Outstanding Contribution to Student Learning' from the Australian Learning and Teaching Council for creating engaging and inspiring learning

experiences for students at a regional campus which harness their natural curiosity in genetics, evolution and conservation (\$10,000): 2012, third best 'Teacher of the Year' from LTU on the 'Lecturer of the Year' on the Australian Universities website: 2012, 'Outstanding Teacher' citation on the 'Teaching and Learning' page of LTU website: 2013, 'Staff Award' for contributions to achieving the goals of the strategic plan in the area of 'Community Engagement and Partnerships': 2014, LTU Citation for 'Outstanding Contribution to Student Learning' – for development of a unique, media-rich cross-disciplinary approach to online teaching, facilitating flexible, engaged, independent learning, as exemplified in the subject, 'Science in the Media' and in 2015, nominated for La Trobe Student Union staff award.

It is evident that over its lifespan, DEME had progressively developed a culture of excellence in 'teaching and learning' endorsed by sustainable enrolments in the EME degree, consistent strong enrolments into Honours, teaching and learning awards received by staff and consistently high praise accorded to staff by students for their 'care and concern' for their needs, particularly those who were mature-aged, had physical disabilities, learning difficulties or were of indigenous descent. The academic stature and status of DEME from foundation was never in doubt but unfortunately, it was never financially sustainable.

THE RESEARCH PERSPECTIVE

From the outset, it was envisaged that the teaching and learning function of DEME would be empowered by research. The geographical location of the Wodonga campus effectively meant that DEME had a 'natural' research laboratory on its 'doorstep' with three major river systems (Murray, Ovens and King) nearby along with their associated wetlands and catchments, together with a local community which for generations has depended on the health of these river systems and the surrounding land masses for its well-being and prosperity. Add to this asset an alpine region to the SE (Bogong High Plains, Mt. Buffalo and Mt. Buller) and semi-arid regions to the West and the scope and need for 'natural resource management' research in the local region is self-evident. These research opportunities for DEME, particularly in freshwater ecology, were further enhanced by the integration of the MDFRC into the University in 2003.

Despite greater levels of teaching and administrative duties compared to their counterparts at the city campus, DEME academic staff from the outset were 'research active' and highly motivated and passionate about their chosen specialities and were supervising Honours and higher degree students from 1995 onwards.

Dennis Black was passionate about the taxonomy and ecology of Australian millipedes, reptiles and amphibians. He was also interested in terrestrial invertebrate ecology in alpine habitats and their role in pollination of alpine plants. In the wake of Wodonga having been exposed to bush fire threats over many decades, he was exploring the impact of fire on mammal, reptile and invertebrate communities in the Albury-Wodonga region.

Gerry Closs was passionate about Australian freshwater fish, their ecology, habitat and feeding regimes. Susan Lawler was a geneticist and her research was focussed on the conservation, ecology and evolutionary genetics of native fauna, especially freshwater crayfish and Australian native bees. She also undertook extensive research into advancing and refining teaching and learning methodologies at the tertiary level.

Roger Croome was passionate about 'algae' and spent many hours peering down microscopes to reveal their diversity and beauty. Thus, his major research interest was the ecology of freshwater phytoplankton. He also had much experience in researching the relationship between vegetation, water regimes and wetland type in wetlands of the Murray River floodplain. In particular, he undertook a long term study of the limnology, algae and photosynthetic bacteria of Norman's lagoon.

John Hill had a long history of research in Chemistry (1970 – 1990) at the Bundoora campus and at Wodonga, he expanded into chemical education research. He undertook a PhD in chemical education at Melbourne University (2000 – 2005) which led to a restructure of the 'Chemistry 1' course in Australian Universities. Also, at Wodonga, he developed a research interest in 'sustainable natural resource management' (SNRM) subsequent to a directive of a 'regional review' undertaken by the Council of LTU in 2003, which recommended that the Wodonga campus establish a 'centre for SNRM'. The rationale for this directive was that the Wodonga campus already had an excellent research record in environmental management which would be enhanced by the presence of MDFRC on site. Also, Lin Crase in Business at Wodonga had major research interests in 'water economics' and Jayanath Ananda, also in Business, had a research interest in the economics of 'greening' the Australian industry. It was also suggested that the Social Sciences unit at Wodonga could contribute a 'social dimension' to the SNRM centre. As Head of Campus at this time, John Hill's responsibility was to implement this directive which led to several joint publications for the campus. Also, at Wodonga, John Hill developed a collaboration with Professor Saleem Mustafa, Director of the Borneo Marine Research Institute, University of Malaysia – Sabah, researching the effects of water quality in aquaculture and natural resources management and food security in the context of sustainable development.

Susan Lawler's research interests are in conservation biology with an emphasis on evolutionary genetics. Her passion is research into the phylogeny of Australian freshwater crayfish and also the ecology of these iconic species. She has studied a wide range of organisms including fruit flies, honeybees, regent parrots, mountain pygmy possums, Bogong moths and snowgums.

Cath Meathrel was passionate about the physiology of seabirds. Her 'research laboratory' was Big Dog Island, one of several in the remote Furneaux Archipelago in Bass Strait. Also, she was the custodian of the 80+ year old archive of physiology records of tagged short-tailed shearwaters (mutton birds) *Puffinus tenuirostris*, to which her main research interest was directly related. She also researched freshwater turtles in the Murray River floodplain.

Warren Paul is a statistician, the methodologies of which he applies to analyse and interpret environmental data. These included causal modelling and statistical design for ecological research and for assessing the impact of (or recovery from) an environmental disturbance: developing multivariate methods for detecting and modelling the effects of environmental disturbances using 'distance-based' Redundancy Analysis (dbRDA) and Canonical Correspondence Analysis (CCA) together with development of new distance-based methods for non-linear modelling of multivariate species data and for change-point analysis of multivariate ecological time series.

Peter Pridmore had a passion for the 'locomotion' (functional morphology) of vertebrates, in particular, the aerial capabilities of the feathertail glider (*Acrobates pygmaeus*) and some members of the genus *Petaurus*. He also researched the swimming and sensory abilities of fossil and living lungfishes, the affinities of conodonts of the fossil remains of Pleistocene giant rat

kangaroo (*Propleopus oscillans*) and the climbing abilities of living dasyurid marsupials. He also studied the locomotor behaviour of Murray-Darling Basin fishes, the ecology of Victorian Wild dogs and the origins and evolution of vertebrates in the flora of Australia and New Guinea.

Ewen Silvester had a distinguished career as a chemist in CSIRO (Clayton) before joining DEME and thus his research in environmental management has a strong chemical/analytical emphasis. His research interests are also closely aligned with many projects being undertaken in MDFRC. He has a specific interest in understanding the links between hydrology, vegetation and chemical regulation in rivers and wetlands and the role of aquatic fungi (*hyphomycetes*) in the formation of natural organic matter (NOM) through both the oxidative decomposition of lignin and the incorporation of fungal nitrogen. He is also interested in the seasonal and hydrologic controls over the transfer of alkalinity between vegetation, soils and aquatic systems and the role of DOC in controlling stream buffering. A separate study is focussed on 'iron geochemistry' related to the reactivity of surface-adsorbed Fe(II). This involves developing new electrochemical techniques to measure surface reactivity (outer one-electron shuttles), synthesis and characterisation of nanoparticles in the Fe-S-As system (particularly FeS₂ and FeAsS), the study of geochemical reactions exploiting optical transparency of nanoparticles (eg adsorption and oxidation reactions) and the development of kinetic models for nano-particle surface reactions (surface energy effects).

A more recent and exciting aspect of his research is the use of the (Australian) synchrotron infrared microspectroscopy (IRM) system for the study of aquatic processes involving plants (leaves, mosses, algae) and the development of new experimental methods for the study of aquatic processes (e.g. in-situ liquid cell) together with the development of improved procedures for the analysis of IRM map data (Mie scattering correction, multivariate curve resolution statistical analysis).

Phil Suter had a passionate interest in the taxonomy and ecology of Australian mayflies (*Insecta: Ephemeroptera*). Students were enlightened and enthralled by such passion revealed in his lectures and no doubt this attracted many to undertake Honours. He also had a research interest in the ecology of Alpine peatlands and stream macroinvertebrate communities and the ecology of floodplain wetlands. He was a member of the Scientific Panel that investigated the environmental flows of the River Murray and the Lower Darling river.

Peter Taylor had research interests in the 'energy efficiency of commercial buildings' and was an energy efficiency consultant during the construction of the unique rammed earth buildings on the Charles Sturt University campus at Thurgoona in the mid-1990's. CSU later won an award for these green/energy efficient buildings.

Percy Thomas was an environmental 'engineer'. His research interests were in industrial waste water treatment, waste minimisation in the water industry, the nutrient content and water quality of rivers and streams receiving waste waters and the principles and practices of industrial 'cleaner/greener' production. In particular, he had a research focus on the engineering principles of catchment restoration and management.

Helen Wallace's time in DEME was very short but nonetheless her research interests blended well with those of the Department, being focussed on the population structure, genetic diversity and reproductive biology of Australian native plants.

It should also be noted that MDFRC research scientists were involved in the supervision of DEME honours and postgraduates students in the research areas of fish physiology (Rick Stoffles), water quality and wetland soil chemistry (Darren Baldwin), fungal ecology and foodweb research (Gavin Rees), wetland ecology and macrophyte seed bank (Daryl Nielson) and water resource management (Ben Gawne).

DEME staff (Roger Croome, Phil Suter, Susan Lawler and Cath Meathrel) were members of the Cooperative Research Centre for Freshwater Ecology (CRCFE), which was formed in 1993 and conducted research in freshwater ecology, biological monitoring, computer modelling, statistics, environmental chemistry and fish biology. The CRCFE was succeeded by eWaterCRC in 2005 and DEME staff representatives were Roger Croome, Phil Suter and Ewen Silvester.

Three metrics are usually applied to quantify the research excellence of an academic department: competitive research funding from external sources, number of completed higher degree graduations (including Honours) and number of peer reviewed publications including journal articles, books, chapters and sections in multi-authored books and published international and national conference proceedings. In all of these categories, DEME has a record to be proud of. Over the 24 year period of its existence, academic staff were awarded a total research funding quantum in excess of \$3.3m (Addendum 3), 114 Honours, 2 MSc and 14 PhD's graduated (Addendum 1) and a total publication output in excess of 150 articles was achieved (Addendum 4). In addition, the University consistently highlights in its publicity promotions that its courses are specifically designed to lead to realistic employment opportunities both in Australia and overseas. DEME Honours and Higher Degree graduates fulfilled this expectation (Addendum 5), many of whom were employed locally in the Albury-Wodonga region, thereby fulfilling its commitment both to the local authorities and to the community at large. For a 'small' academic department in a 'small' university campus, DEME consistently performed well above expectation in terms of its research performance and community commitment to sustainable environmental management.

OUTREACH and COMMUNITY LIAISON ACTIVITIES

Since the *raison d'être* of the Wodonga campus is to enhance the higher education opportunities for the local community, outreach activities have always been an important part of its overall mission.

Wodonga campus 'Open Days' are held annually, initially on a Sunday and from 2005 onwards, on a Friday evening in August, timed to coincide with Year 12 students' considering their futures in terms of postponing their chosen careers in favour of further studies at a tertiary institution. In this context, a special effort is made during these Open Days to emphasise the advantages of studying at a regional campus – the courses are equivalent in content and standard to corresponding courses at the city campus but the class sizes are smaller and thus individual tuition opportunities are greater. Further, the campus Academic Skills Unit provides 'Getting Back to Studies' sessions and 'Bridging Courses' for students who do not have appropriate ATAR scores for direct entry to the University. DEME consistently presented its course offerings in an instructive manner at Open Days by setting up interactive displays and holding consultations with academic staff in conjunction with guided tours of the department to highlight its facilities. It was made clear that students enrolling in the 'Biological Sciences' stream would undertake a common Year 1 course with EME students but the former would have to transfer to the Bundoora (Melbourne) campus to complete their chosen degree course in the School of Life Sciences. It

was emphasised to EME students that at both Year 2 and Year 3 levels, field excursions were a compulsory part of the course and formed part of the overall assessment. A photo gallery display of students participating in these field excursions was convincing evidence of their enthusiasm and enjoyment of these activities and thus formed excellent 'promotional' material for DEME.

From 1996 onwards, DEME worked closely with a number of local organisations involved with natural resource management in all its facets. Collaboration with these organisations provided much of the practical involvement with community groups required by the next generation of resource managers and complemented the academic areas associated with conservation and resource management. The BSc in Environmental Management and Ecology was a unique degree in providing students with a sound ecological and legal background and the ability to work with community groups and understand their motivation in the economic and social environment in which they would later work. Through Cath Meathrel, linkages with local Land Care groups were established and she held administrative office positions within these groups. The facilitator of many of these groups was Pat Larkin, one of the early graduates in the Graduate Diploma in Environmental Management programme and through him, numerous students did 'work placement' in third year, addressing landscape and stream management in NE Victoria. Susan Lawler established a strong relationship with the Highland Land Care group in the Strathbogie Ranges which was mutually beneficial to the group and to the students. The third year work placement unit also provided the opportunity for students to work in both State and Commonwealth departments in the Albury-Wodonga region as well as Catchment Management Authorities in Victoria, the dairy industry and wetland management organisations. These linkages provided staff and students with ideal opportunities to support local groups with 'good science' knowledge and 'hands-on' environmental management skills. Students also learned the importance of being able to present their scientific knowledge at an appropriate level to community groups. Without good communication between researchers, managers and the general public, conservation and resource management outcomes are limited in quality or restricted in range. The latter emphasis was a major strength of the BSc in Environmental Management and Ecology.

From 2008 onwards, the Wodonga campus has hosted a 'Sustainability Fair' in conjunction with the annual Open Day. It focusses on 'sustainable living' and the preservation of resources and minimising the negative impact of human activities on the environment. DEME staff and postgraduate students made many contributions to these fairs particularly with respect to highlighting their research activities with interactive displays.

DEME has vigorously supported the 'Jonathan Mann Lecture' which is presented annually at the Wodonga campus and is sponsored by the Mann family. This public lecture is designed to give appropriate expression to the unique historical, cultural and lifestyle influences that expound the vitality and spirit of the people of the 'Border Region'. The titular theme 'The Murray and its People' provides a focus for eminent speakers from a variety of disciplines and backgrounds. These lectures commenced in 1993 on the recommendation of David Mann – the great grandson of Jonathan Mann. He was a foundation (and Life) member of the Wodonga campus Regional Advisory Board and he attended every lecture up to his death in 2012. The first Jonathan Mann Lecture was delivered by David Mitchell, Director of the Murray Darling Freshwater Research Centre, which was then based at Charles Sturt University, Thurgoona. The Jonathan Mann Lecture remains as the major public discourse on the Wodonga campus calendar of events and the vision of its founder remains as an enduring epitaph in the community. Attendance at these

lectures has always been at capacity levels such that in recent years, advance bookings are required.

It is perhaps inevitable that this lecture series has 'Murray River management' emphasis as evidenced by three DEME related presentations: Terry Hillman (1995) 'Managing the Murray Darling: Hydrology and Ecosystem': Roger Croome (2003) 'Managing the Murray: Acknowledging the 'Sadim Touch' and moving towards redemption' and Ben Gawne (2004): 'The Living Murray: A Healthy, Working River'. Other lectures have focussed on the 'social', 'political' and 'economic' aspects of 'The Murray and its People'. Examples of the latter are Roger Parish (1997) 'Confronting Utopia: Re-examining our approach to the environment' and Tim Murray (1999) 'Murray River People: Aboriginal Archaeology/Aboriginal History', thereby providing a 'balanced' overall coverage of historical and current sustainable management strategies of the Murray-Darling basin. Overall the Jonathan Mann Lecture continues to give the Border Region community an insight into the rich history of the 'Murray River and its People' and the major role that the Wodonga campus is undertaking in sustaining that heritage through its educational and outreach programmes.

In 1989, the 'Alpine Ecology' course was initiated by staff at La Trobe University (Melbourne campus) and Melbourne University. It was established as a means of improving the ecological knowledge of those responsible for managing land in the Australian Alps. The course covered topics associated with soils, geomorphology, plants and terrestrial animals. With the opening of the Wodonga campus of La Trobe University and the availability of DEME academics with expertise in terrestrial invertebrates – insects, spiders etc., (Dr. Dennis Black), aquatic micro-invertebrates (Dr. Phillip Suter) 'and water chemistry (Dr. Ewen Silvester), these additional specialist areas were included in the course. This popular course included sessions on the Australian alpine landscape and ecosystems, sub-alpine and alpine soils, vertebrate and invertebrate ecology, alpine plants and vegetation communities, weeds and their impact on the alpine environment and effects of fire and feral animals on the alpine vegetation communities. This course continues and is now run under the banner of the Research Centre for Applied Alpine Ecology (<http://australianalpineecology.org/index.php?page=capabilities>)

The 'Wise Water Ways' (known as 'WWW') short course was an initiative of Lachlan Campbell who was a Senior Instructor at Goulburn Ovens Institute of TAFE (GoTAFE), Wangaratta. He understood that there was a need for training scientists, engineers and business managers on practical techniques relating to the management of rivers, streams and wetlands and in 1997 he established a feasibility study in Wangaratta to decide how this objective could be addressed in the short and long terms. A committee, chaired by Lachlan was formed composed of professionals in the local water management industry and a DEME representative – John Hill, who at that time was Head of Department. It was agreed to 'pilot' a 'short course' in 'management of water ways' which would be structured on 'theoretical and practical' objectives and participants who completed the course would be granted a TAFE certificate in 'environmental management' which would be advantageous to their career advancement opportunities. The venue for the 4-day 'residential' course was the conference centre at the newly established Beechworth Campus of La Trobe University. This was ideal from the viewpoint of on-site hotel-type accommodation and catering facilities (Sambell Restaurant) and several 'break out' rooms. It was decided that a minimum of 30 participants was required to make the proposal viable. Subsequent to the closure of the Beechworth Campus in 2008, WWW was convened thereafter at GoTAFE, Wangaratta. WWW has attracted sponsors from many water and land management authorities throughout its

lifetime. The fact that WWW is still a viable and highly regarded teaching and learning instrument in sustainable natural resource management both in the Border Region and interstate is testament to the wisdom of its founder and leader and to the quality and relevance of the programme that is routinely articulated.

The course is composed of presentations by practitioners of resource and land management from government departments, academia and private enterprise in three morning sessions and two 'in-field' projects in the afternoon sessions. Participants are divided into several groups for these projects and are allocated 'sites' in localities around Beechworth. They undertake typical measurements relating to 'water quality' such as water chemistry and its effect on aquatic macro-invertebrate communities and write a group report on their findings. Each group gives a short report on their results and interpretation thereof at the dinner function on the final evening. These reports are judged and prizes awarded. Many of these reports provide significant data on the quality and health of regional waterways in the Beechworth, Yackandandah and Wangaratta regions. In more recent years, students from Charles Sturt University have taken the course for credit in their degree based on related assessment of oral presentations and assignments.

DEME has from the outset made significant contributions to the WWW meetings by initially providing modest sponsorship for its establishment and throughout, loaning equipment for the 'in-field' practicals. Initially, Roger Croome, presented the 'water quality' lecture, which focussed on his special expertise of blue-green algae. From 1998 to 2013, Phil Suter presented a lecture on 'macroinvertebrates as indicators of water quality', which allowed him to emphasise the unique characteristics of his beloved mayflies. This water quality lecture was taken over by Ewen Silvester from 2014, which gave it a 'chemistry' bias but nonetheless showed how 'water chemistry' is crucial in understanding and measuring 'water quality'. Each year, WWW invites a guest speaker to present the after dinner talk on relevant issues associated with management of rivers and wetlands. In 2004, Professor Ben Gawne from MDFRC presented 'What is a healthy river?' and in 2012, Professor Lin Crase from Business, LTU Wodonga, presented 'Water is more than the volume held by a bureaucrat in Canberra'. These guest speakers also gave repeat presentations to a public forum at the Wodonga campus during the course of the WWW meeting (which was generally held in 'Water Week') thereby involving the local community in water management strategies and activities.

Each year during 'Science Week', the Royal Australian Chemical Institute sponsors 'The Hartung Youth Lecture', which is aimed at Year 10 high school students to stimulate their interest in the sciences and chemistry in particular and urge them to continue their studies to HSC level. The lecture is presented in Melbourne and in several regional centres. Since 2010 it has been presented at the LTU Wodonga campus. Martin Fussell has organised for Year 10 students from Albury and Wodonga High Schools and other nearby centres to attend the lecture – held in 'The Hanger'. Typically 10 – 12 groups have attended giving an audience of 200+. The key aspect of the Hartung Youth Lecture is the accompanying 'illustrations' demonstrating 'chemistry in action' – so 'explosions' are common albeit with respect given to OH&S concerns of the presenter and the audience! This annual lecture is another major component of the Wodonga campus calendar of events.

An initiative of Susan Lawler has seen DEME provide genetics training as part of the VCE Biology studies requirement. Each year, over 300 VCE students attend sessions on the Wodonga campus of La Trobe University to study the genetics of the fruit fly '*Drosophila*'. This ongoing programme enables the students to have 'hands-on' involvement with the principles of genetics

and the manipulation of DNA by setting up a PCR reaction. Local schools appreciated this programme which was designed to meet criteria for the Year 12 Biology subject.

DEME students were also involved in the 'In2science' initiative which was a 'science-based' peer monitoring programme involving universities and schools across Victoria and State Government funded as part of the 'STEM' promotion scheme. This programme lasted for several years from 2004 and many DEME students volunteered to participate in the scheme which involved them being 'paired' with a teacher in a local primary or secondary school for a couple of hours each week developing science related 'hands-on' projects and activities designed to simulate enthusiasm of school students for science learning with the long term aim of increasing 'STEM-trained' professionals. The programme manager was John McDonald from the Bundoora campus who was awarded an Australian Teaching and Learning Council Citation for his outstanding contribution to student learning.

These outreach activities into the local communities had a positive spin-off for La Trobe University. In the mid-2000's, the proportion of students from the north east of Victoria enrolling in courses at La Trobe (all campuses) exceeded 25% with the next most popular university (Charles Sturt) attaining <15%. The presence of La Trobe at Albury-Wodonga and the extent of outreach and community engagement activities of DEME and all Albury-Wodonga staff and students contributed significantly to this enhanced enrolment outcome.

EPILOGUE

It is paradoxical that this review has to conclude on a sad note. During the deliberations during 2013-14 on implementation of the La Trobe University 'Future Ready' plan, DEME had put forward a very strong case for its continuation based on its documented record of the popularity of its Environmental Management & Ecology degree course, its record numbers of Honours, MSc and PhD graduates and their impressive employment statistics, its thriving externally funded research projects, its interactions and collaborations with the (on-site) Murray Darling Freshwater Research Centre and its committed and sustainable outreach activities both locally and state-wide. In essence, DEME had continuously endorsed the rationale and enacted the vision for establishing the Albury-Wodonga regional campus and it was widely recognised throughout the Border Region as a vital tertiary educational resource commensurate with the needs of the local communities. However, the low student numbers and the unsustainable financial position led to the closure of DEME and it ceased to exist as an academic entity within the newly established College of Science, Health and Engineering (SHE) at the end of 2014. It is some consolation that DEME's legacy of outstanding academic commitment and service over a period of nearly a quarter century lives on in the memories of the many cohorts of its students who are now part of future generations of 'environmental managers'.

ACKNOWLEDGEMENTS

We believe that we have achieved our objective to record and document the 'life and times' of DEME over its 24 year history by duly acknowledging the achievements of its staff and multiple generations of its students which collectively constitute its lasting memories. This is their story.

We also gratefully acknowledge Isabella Milevski for uploading this document onto the 'La Trobe 50th Anniversary' website.

ADDENDA

1

Graduates from the Department of Environmental Management and Ecology 1994-2017

Graduates Conferred in 1994

Graduate Diploma in Environmental Management

Jeffrey Ernest ACKLAND
Angela Margaret CHAPMAN
Margaret Susan CHARLES-JONES
Guy CORBETT
Brian William CUFFLEY
Robert Clive MARTIN
Philip Emlyn RICHARDS
Warren Linton VOGEL

Conferred *in absentia*

Graduate Diploma in Environmental Management

James Barry O'BRIEN

Graduates Conferred in 1995

Graduate Diploma in Environmental Management

David Robert ALLEN
David Thomas HARRISON
Robert Keith Fairless HARROD
Melvyn William JACKSON
Michael Leslie MCCARRON
Robert Edward PILL
Digby Hamilton RACE
Wayne Keith TENNANT
Lorelei Elizabeth VAN CAMP
Adele Diane WHITAKER

Conferred *in absentia*

Graduate Diploma in Environmental Management

Anthony Paesen EDWARDS
Raymond LANDINI

Graduates Conferred in 1996

Graduate Diploma in Environmental Management

Janice Joy PALMER
Mary-Anne SCULLY
John Anthony SYKES
Peter Bryan WATKINSON
Alan WRAGG

Conferred *in absentia*

Graduate Diploma in Environmental Management

Robert James CLARK
Andrew Frederick KIMBER
Robert William LOOBY
Desmond Noel MENZ
Paul Anthony SPIERS

Graduates Conferred in 1997

Bachelor of Science

Matthew Francis ADKINS
Gregory Nathan LIESCHKE
Louise Kathleen MCGEOWN
Luke Elton RIZNIAK

Bachelor of Science (Environmental Management and Ecology) with Honours

Timothy J. CURMI

Conferred *in absentia*

Graduate Diploma in Environmental Management

Raymond GEAR

Graduates Conferred in 1998

Graduate Diploma in Environmental Management

John Richard ALKER-JONES
Jennifer DAVIES
Kenneth Wayne ELLIS
John Orford HILL
Veronica Jane LANIGAN
Stephen Roy MARTIN
Shelley William MORPHY
Adrian John PARKER
Arampamoorthy SATHIYAMOORTHY
Colin Mark TEEK
Frank James TUBB
Edward Charles WOODBURY

Bachelor of Science

Matthew James ALLEN

Bachelor of Science with Honours

Tamara Louise FEEHAN
Alexandra Margaret OLEJNICZAK

Conferred *in absentia*

Graduate Diploma in Environmental Management

Lisa Jane FITZPATRICK

Bachelor of Science

Nigel Jason SMEDLEY

Graduates Conferred in 1999

Bachelor of Science

Nerissa Lee BARTLETT
Craig Andrew BELL
John Campbell CONALLIN
Paul David DWYER
Benjamin John FENSELAU
Tracy Ann MCLARTY
Adam John PANOZZO
Vanessa Mary RICHENS
Tennille J ROBERTS
Alicia Joy SMITH

Bachelor of Science with Honours

Ricci Chanelle CHURCHILL
Bernard John COCKAYNE
Anthony John CONALLIN
Colleen Joy MULLEN
Rick James STOFFELS
Kate Alison STUART

Graduate Diploma in Environmental Management

Richard John ARMSTRONG
Terry Edward BEVIS
Helen Margaret BRINDLEY
Peter Gerard GRIEVE
Denis Patrick LARKIN
Peter John O'DWYER
Clare Frances PURTLE
James Wallace SCOTT

Conferred *in absentia*

Bachelor of Science

Paul Andrew RATAJCZYK
Nigel SMEDLEY

Bachelor of Science with Honours

Glenn Raymond SHELL

Graduate Diploma in Environmental Management

Frederick Wayne EXTON
Herbert KAISERSIEDER
Anu PROOS

Graduates in 2000

Bachelor of Science

Erma Christiana BRIGGS
Julie Ann MAKINGS
Timothy Paul NICHOLLS
Geoffrey Alan O'NEILL
Michael John SINCLAIR
Lucy WIDDUP

Bachelor of Science with Honours

Jennifer Lesley BURSTON
Janelle Elyse COLLINGE
Jennifer Ann DWYER
Annika Nicole EVERAARDT
Jarod Paul LYON
Brooke Elizabeth MARGERY-BARRETT
Kathryn Doreen OSWALD
Melanie Joy PEARSON

**Graduate Diploma in
Environmental Management**

Stephen Wallace Fraser BUTLER
Stephen Anthony DAHL
Gregory Mark JOHNSON
Natalie Kaye O'CONNELL
Glenys SCHOLFIELD

Master of Science

Gregory Wallace RAISIN, BAppSc *Canberra*
GradDipOccHazMgt *Ballarat*

Conferred *in absentia*

Bachelor of Science

Regina Marie GLASS
Kathie KIMPTON

**Bachelor of Science
with Honours**

Robert Alan COOK

**Graduate Diploma in
Environmental Management**

Geoffrey Ross Every PYM

Conferred in 2001

Bachelor of Science

Sarah Jane BROWN
Ryan Daniel BUTLER
Megan Natasha CLARKSON
Geoffrey Norman EDNEY
Melina Paige ENTWISTLE
Julie Anne HANLEY
Sharon Elise HOWLETT
David Andrew KLEINERT
Kirsty Elizabeth LEACH
Pettina LOVE
Rachael Susan MAHER
Skye Louise MCKENDRY
Natalie Anne ORD
Michael Milan SETKA
Helen Claire WISE
Jacqueline Rebyn WISE

Bachelor of Science with Honours

Christopher Anthony BIESAGA
Matthew Peter BURT
Kylie Macleish DURANT
Deborah Louise GRIBBEN
Paul James MCINERNEY

Conferred *in absentia*

Bachelor of Science

Natalie WRIGHT

Bachelor of Science with Honours

Paul Andrew RATAJCZYK

Conferred in 2002

Bachelor of Science

Tracey Alice BOWERMAN
Nathan Stanley Peter NING
Rochelle Therese PETRIE
Maree PETROW
Amy Louise WARREN
Kylie Maree WILLIAMS

Bachelor of Science with Honours

Kathryn Marie BIESAGA
Karen Louise BOWLAND
Cassandra Lee BRYCE
Geoffrey William HEARD
Benjamin Paul HOLLOWAY
Kathie KIMPTON
Amanda Michelle MIGGINS
Lynda May STUCKEY

Graduate Diploma in Environmental Management

Eileen Louise CLARK
Geoffrey HOLLOWAY
Mark Gerard LAWLOR
Susan Mary LEAVOLD
John Alfred MCCLELLAND
Richard James SCOTT

Doctor of Philosophy

Jacqueline Ann GRIGGS, BSc(Hons), *Tasmania*
Taxonomic, Biogeographic and Genetic Studies on
Australian Chydorids
– Environmental Management

Conferred *in absentia*

Bachelor of Science

Louise SCHURAVEL

Conferred in 2003

Bachelor of Science

Michael Alexander CHAPMAN
Craig Joseph DOUGHERTY
James David HOCKING
David Charles LINDSAY
Jodie Marce MEMBERY
Katherine Monica SLEVIN
Charlie Robert SUGGATE

Bachelor of Science with Honours

Ross James TEMPLETON
Zeb Douglas TONKIN
Aaron Kevin TROY

Doctor of Philosophy

Stephen Richard BALCOMBE, BSc(Hons)
Resource use by *Hypseleotris (Pisces: Gobiidae)* in the
Littoral Macrophytes of a Floodplain Billabong
– Environmental Management

Conferred in 2004

Bachelor of Science

Ross John CLARK
Nicholas Anderson MAY
Adam Gregory RICHTER
Bianca Nicole WOOLLEY

Bachelor of Science with Honours

Rachael Claire ELSO
Martin FUSSELL
Michelle Louise SMITH
Matthew Thomas VOGEL

Doctor of Philosophy

Gillian MCDONALD, BSc, Syd., BAppSc(Hons),
C.Sturt

Development of an Index of Biotic Integrity for the
Grassy Woodlands of the NSW South West Slopes
– Environmental Management and Ecology

Sarah Gillian TAYLOR, BSc(Physio), *Queen
Margaret*, BSc(Hons), *Edin.*

Habitat Use by White-Browed Babblers
Pomatostomus superciliosus in Box-Ironbark Forest
in South-East Australia
– Environmental Management

Conferred *in absentia*

Bachelor of Science

Lisa Janine OLD

Bachelor of Science with Honours

Rachel Louise CLANCY

Graduate Diploma in Environmental management

Gordon Steven CAMERON

Paul Andrew KERSEY

Peter William MILLS

Conferred in 2005

Bachelor of Science in Environmental Management and Ecology

Jodie Louise ARNUP
Scott HOWE
James Byron MCMULLEN
Nissa Salina MURPHY
Sarah Anne WHITFIELD

Bachelor of Science (Environmental Management and Ecology) with Honours

Eleanor BRADBURY
Jessica Louise BUTLER
Sarah Emma DANIELL
Michelle Lyn DUIMOVICH
Margaret Caroline Murray LINDSAY
Simon Ross LUKIES
Nathan Stanley Peter NING
Joel Samuel PORTER
James Allan WYATT

Doctor of Philosophy

Dale Gordon MCNEIL, BA, BSc(Hons),
Monash
Ecophysiology and Behavior of Owens
River Floodplain Fish: Hypoxia Tolerance
and the Role of Physicochemical Environment
in Structuring Australian Billabong Fish
Communities
– Environmental Management

Conferred *in absentia*

Bachelor of Science in
Environmental Management
and Ecology

Leanne KOMISSAROV
Adrian Noel RIJNBEEK

Bachelor of Science
(Environmental Management and
Ecology) with Honours

Lacy WIDDUP

Graduate Diploma in
Environmental Management

Paul John FENNELL
Heinz Gerhard KAUSCHE

Conferred 2006

Bachelor of Science in
Environmental Management and
Ecology

Kelly Mike BLACKALL
Cameron Gray MCCREGOR
Tara Louise PITMAN
Ainsley Jacqueline ROSSER
Laura Joan SCOFIELD

Bachelor of Environmental
Management and Ecology with
Honours

Sara Margaretha LOS

Bachelor of Science
(Environmental Management and
Ecology) with Honours

Mark James CAREY
Prudence Jay MCGUFFIE
Teasha Claire SLOANE

Conferred *in absentia*

Bachelor of Science in
Environmental Management and
Ecology

Steven Nicholas SAMIOS

Bachelor of Environmental
Management and Ecology with
Honours

Craig Arthur HAMILTON

Conferred 2007

Bachelor of Science in
Environmental Management
and Ecology

Toby John AIKER-JONES
Leighlan BLACK
Kirsty Monae EIRINGTON
Brendan James LANE
Joshua Nathaniel LYON
Braydon Alexander MARSHALL
Elin Alice NIELSEN
Stuart Russell SINNOTT
Danielle Wynne SMITH
Katrina Lorraine TATNALL

Bachelor of Science in
Environmental Management
and Ecology with Honours

Marjile HOENDERDOS
Shannon Amy SLADE

Conferred *in absentia*

Bachelor of Science in
Environmental Management
and Ecology

James Gregory DYER

Bachelor of Science in
Environmental Management
and Ecology with Honours

Michael Edward SHACKLETON

Bachelor of Science
(Environmental Management
and Ecology) with Honours

Ruth CORNFORTH

Conferred 2008

Bachelor of Science in Environmental Management and Ecology

Heidi Lee JOSIPOVIC
Robbie Jürgen SCHAEFFER
Stephanie Gillian Anne SUTER

Bachelor of Science in Environmental Management and Ecology with Honours

Amy Nicole BOULDING
Diana Christine STREET

Graduate Diploma in Education (P-12) also receiving Bachelor of Science (Environmental Management and Ecology) with Honours

Rosemary Ann BARRETT

Conferred *in absentia*

Bachelor of Science in Environmental Management and Ecology with Honours

Daniella Wynne SMITH

Conferred in 2009

Bachelor of Science in Environmental Management and Ecology

Rachel Maree BRADSHAW
Joshua Martin FLINT
Emma Cathryn FUCHSEN
James Patrick GALES
Patricia Rosalind HALPIN
James Edward HAMILTON
Simon Martin IGLOI
Megan Claire ISKOV
Ragan Elizabeth MAYHEW
Kathryn Irene MENTHA
Adam Robert MITCHELL
Julia Hagger MYNOTT
Nicole RENNIE
Peter John SANDERSON
Jessica Ronnie SERGEANT
Verita Rubega STEWART
Karen Louise TYMMS
Clare Julia VINCENT

Bachelor of Science in Environmental Management and Ecology with Honours

Glenn Charles JEFFREY
Simon James MAFFEI

Doctor of Philosophy

Brendan Craig EBNER, BSc(Hons) James
Cook
A Numerical Digestion Method for Estimating
Zooplanktivory by a Fish Population

Nathan Stanley Peter NING,
BSc(EnvManEcol)(Hons), La Trobe →
The Ecology of the Microinvertebrate Fauna
in a Temperate Australian Floodplain River

Conferred *in absentia*

Bachelor of Science in Environmental Management and Ecology

Nyree Claire WILLIAMS

Conferred in 2010

Bachelor of Science in Environmental Management and Ecology

Janine Elizabeth BOX
Matthew Robert FISHER
Thomas Hugh GILTRAP
Sharon Peter GLEESON
Joseph John GRIFFITHS
Emma Joy HAMPTON
Theodore Randal HERRING
Sarah Victoria HOLDSWORTH
Shennen Renee HOWE
Sarah Kate LENDRUM
Alastair James MCCORKELLE
Nigel David ROBERTS
Jason Lee SMITH

Bachelor of Science in Environmental Management and Ecology with Honours

Adrian Ross CLEMENTS
James Gregory DYER
Annaliese Renate KLEIN
Victoria Ann MCCARTNEY
Engrid Erin METCALFE
Stephanie Gillian Anne SUTER
Louise Mary THICKETT
Stephanie Mary ZAHRA

Conferred in 2011

Bachelor of Science in Environmental Management and Ecology

Brendan Marc ALLEN
Lauren Matilda CARR
Shawn Daniel CHARLTON
Matthew Sergio GLAVINA
Todd Edward HUNTER
Terrence Peter KARIS
Jenna Elyse LUDLOW
Nadene Kay PERRY
Laura Ida SAVIGE
Chloe May SCAMMELL
Wendy Lorraine SILVEIRA
Jackson David THOMPSON

Bachelor of Science in Environmental Management and Ecology with Honours

Slade ALLEN-ANKINS
Janine Elizabeth BOX
Ebony Kate BULLOCK
Simon Peter COATES
Nicole Lorraine MCLAUGHLAN
Patricia Anne ROKAHR
Verita Rubega STEWART
Jonathon Peter THOMPSON

Conferred *in absentia*

Bachelor of Science in Environmental Management and Ecology with Honours

Julia Hagger MYNOTT

Doctor of Philosophy

Pettina LOVE, BSc, La Trobe,
BAppSc(Hons), Canb.
Spatial and Temporal Characteristics of
Arsenic in the Bogong Moth (*Agrotis infusa*)

Conferred in 2012

Bachelor of Science in Environmental Management and Ecology

Cassandra Margaret BATES
Megan Nicole CRUMP
Elise Louise EDER
Jodie Louise EGGINGTON
Rachael Marie HALPIN
Clayton William HARRIS
Amanda June HARRISON
Matthew Peter LEACH
Coen Walter MITCHELL
Gerald Moyenda MPHEPO
Elise ANNE O'KEEFE
Lauren Margaret PADBURY
Rachel-Dee Elaine PRESS
Jade Patricia SENKIC
Stuart Charles SMITH
Bradley Richard STEELE
Hamish Maxwell STRACHAN
Jacob Edward WELCH
Karla Maree WILLIAMS

**Bachelor of Science in Environmental
Management and Ecology with
Honours**
also receiving
**Bachelor of Animal and Veterinary
Biosciences**

Georgia Kaye DWYER

Doctor of Philosophy

Mark James CAREY, BSc(EnvMng&Ecol)
(Hons), *La Trobe*
Effects of Investigator Disturbance on the
Reproductive Success of Short-tailed
Shearwaters *Puffinus tenuirostris*

Janice Laraine KERR BAppSci, Charles
Sturt,
BSc(Hons), Deakin
Fungi in Lowland River Floodplain
Ecosystems

Conferred 2013

**Bachelor of Science in Environmental
Management and Ecology**

Erin Marie DORAN
Yasheha HERATH
Mary-Anne Lisa HOLLIGAN
Simon Andrew MOM
Steven John SCAMMELL
Adam William SCOTT
Gayle Margaret SOUTH
Ashleigh Marie WARNOCK

**Bachelor of Science in Environmental
Management and Ecology with Honours**

Megan Nicole CRUMP
Clayton William HARRIS
Lisa Walburga JASPER
Terence Peter KARIS

Conferred *in absentia*

**Bachelor of Science in Environmental
Management and Ecology**

Stuart Bernard CAMPBELL
Ashley Glyn ELLIS
Ryan MCDUGALL-FISHER
Glen Andrew MILLER
Rhianon Louise OATES
Jonathan David ROUT
Hugh Thomas Allan SINCLAIR
Ashleigh Therese SMITH
Kelly William THOMAS
Stuart David WALKER

Conferred in 2014

**Bachelor of Science in Environmental
Management and Ecology**

Christopher Stephen DOWNWARD
Dane Alan GRAHAM
Drew Bryan GRAHAM
Graeme Edward HARRIS
Lucy Jean INGRAM
Matthew Daniel KIERNAN
Catherine Denise MORRISON
Alistair Thomas STEVENSON

**Bachelor of Science in Environmental
Management and Ecology with
Honours**

Kelly William THOMAS

Doctor of Philosophy

Michael Edward SHACKLETON
A Morphological and Molecular Revision of
the Taxonomy and Phylogeny of Calocidae
(Trichoptera: Insecta)

Conferred *in absentia*

**Bachelor of Science in Environmental
Management and Ecology with
Honours**

Jakob Burton BUTLER
Simon Andrew MOM
Stuart Charles SMITH

**Bachelor of Science in Environmental
Management and Ecology with
Honours**

also receiving

**Bachelor of Science in Environmental
Management and Ecology**

Holly Joanna PERRYMAN

Jane Andrea WHITE

Conferred in 2015

**Bachelor of Science in Environmental
Management and Ecology**

Brendan James HART

Christopher Dale HUGHES

Rebecca Fay LITTLER

Ins Lee MILLIGAN

Katherine Annette OLIVER

**Bachelor of Science in
Environmental Management
and Ecology with Honours**

also receiving

**Bachelor of Science in Environmental
Management and Ecology**

Bethany Maree GILLARD

Doctor of Philosophy

Stephanie Gillian Anne SUTER

Contribution of Aquatic Hyphomycete
Communities to Leaf Decomposition and
Food Webs in Alpine Streams

Conferred in absentia

**Bachelor of Science in Environmental
Management and Ecology**

Olivia Anneliese NOUGHER

**Bachelor of Science in
Environmental Management
and Ecology with Honours**

Steven John SCAMMELL

Doctor of Philosophy

John Henry HAWKING

Systematics and Ecology of the
Australian Aquatic Moths, Acentropinae
(Insecta: Lepidoptera)

Conferred in 2017

Doctor of Philosophy:

Paul James MCINERNEY

Effects of Invasive Willows (*Salix* spp.)
on Stream Ecosystem Dynamics

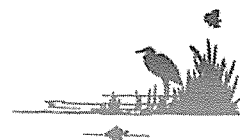
Conferred in absentia

Doctor of Philosophy

Annaleise Renate KLEIN

The Role of the Cyanobacteria Toxin,
Microcystin, in Aqueous Iron
Biogeochemistry

**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT & ECOLOGY
ALBURY-WODONGA CAMPUS**



Honours, Masters & PhD Project Titles & Supervisors

HONOURS STUDENTS

NAME	YEAR	THESIS TITLE	SUPERVISOR
Steven Scammell	2014	Use of stable isotopes to trace the uptake of DOC in biofilm	Dennis Black
Perryman, Holly	2013	The influence of morphology and water depth on foraging in Australian Spoonbills (Threskiornithidae: <i>Platalea</i>)	Dr Peter Pridmore
Jane White	2013	The effects of water parameters and host characteristics of <i>Euastacus armatus</i> (Crustacea: Parastacidae) on the symbionts <i>Temnohaswellia</i> and <i>Temnosewellia</i> (Platyhelminthes: Temnocephalida) in the Buffalo River, Victoria.	Drs Susan Lawler and Alexei Rowles
Kelly Thomas	2013	A Longitudinal assessment of freshwater spiny crayfish (<i>Euastacus armatus</i>) along the Buffalo river, Victoria, in response to surrounding land-use.	Drs Susan Lawler and Alexei Rowles
Simon Mom	2013	Behavioural and metabolic responses to hypoxia of fishes with differing morphologies and lifestyles.	Drs Peter Pridmore and Rick Stoffels
Stuart Smith	2013	Distribution and growth rates of Carp gudgeon (<i>Hypseleotris</i> spp.) across the floodplain of the Ovens River.	Drs Peter Pridmore and Rick Stoffels
Butler, Jacob	2013	The effect of shading on biofilm community structure and composition in the Broken Creek at Nathalia.	Drs Gavin Rees and Susan Lawler
Harris, Clayton	2012	Dissolved Organic Nitrogen in the Ovens River.	Drs Gavin Rees and Ewen Silvester
Crump, Megan	2012	Linking molecular and morphological data in the Freshwater Shrimp <i>Paratya australiensis</i> Kemp (1917) (Decapoda: Atyidae).	Phil Suter
Jasper, Elke	2012	The effect of soil temperature alterations on zooplankton egg bank and aquatic plant seed bank communities in wetlands.	Drs Daryl Nielsen, Nathan Ning & Susan Lawler
Karis, Terry	2012	Response of an alpine peatland to a storm event.	Drs Ewen Silvester and Gavin Rees

Justin Gorwell	2011	The relationship between lateral line morphology and foraging behaviour in two freshwater gudgeons (Eleotridae)	Drs Peter Pridmore and Rick Stoffels
Georgia Dwyer	2011	Behavioural and metabolic responses of fishes with differing modes of life to hypoxia.	Drs Rick Stoffels and Peter Pridmore
Megan Iskov	2011	Habitat characterisation of the genus <i>Acrobates</i> (Marsupialia: Acrobatidae) in relation to climate and vegetation	Dr Peter Pridmore
Trevor deFreitas	2011	The Diurnal migration patterns of microinvertebrates within the Broken river, North-Central Victoria	Dr Phil Suter
William Terry	2011	The Autecology of the Pink-tailed Legless Lizard <i>Aprasia parapulchella</i> .	Dr Dennis Black
Verita Stewart	2010	Effects of recreation fishing pressure on the Murray crayfish (<i>Euastacus armatus</i>) in the Lower Ovens river, North East Victoria	Dr Susan Lawler
Ebony Bullock	2010	Methods for the assessment of wetland condition in south-eastern Australia: incorporating non-invasive assessment of frog assemblages.	Dr Phil Suter
Janine Box	2010	The ecology of the ectoparasite fauna of Short-tailed shearwaters <i>Ardenna tenuirostris</i> on Great Dog Island, Tasmania.	Dr Catherine Meathrel
Slade Allen-Ankins	2010	The effect of turbidity, light level and physical structure on feeding in juvenile murray cod.	Dr Peter Pridmore
Patricia Rokahr	2010	The application of casual modelling to environmental impact assessment at the Wangaratta wastewater treatment plant.	Dr Warren Paul
Nicole McLaughlan	2010	Effects of dissolved oxygen on the metabolic response of an endangered freshwater fish, the purple-spotted gudgeon (<i>Mogurnda adspersa</i>).	Dr Peter Pridmore
Simon Coates	2010	Factors shaping the distribution of two freshwater crayfish species along a thermal gradient: Environmental correlates with distribution, metabolism and behaviour.	Dr Susan Lawler
Nyree Williams	2010	Factors affecting patterns of divorce in Short-tailed Shearwaters <i>Puffinus tenuirostris</i> breeding on Fisher Island, Tasmania.	Dr Catherine Meathrel

Jonathon Thompson	2010	The effects of fire frequency on ant (Hymenoptera: Formicidae) communities in open eucalyptus forest in north-east Victoria.	Dr Dennis Black
Julia Mynott	2010	Testing the species validity and larval associations of the alpine stoneflies, <i>Riekoperla</i> (Plecoptera: Gripopterygidae)	Dr Phil Suter
Victoria McCartney	2009	Bryophytes and associated testate amoebae communities in groundwater-fed bryophyte pools and peatlands, in the alpine and sub-alpine areas at the Bogong High Plains, and Strathbogie Ranges, Victoria, Australia.	Dr Phil Suter
Annaleise Klein	2009	Salinity-Induced Acidification of an Upper Murray River Wetland.	Dr Ewen Silvester
James Dyer	2009	A comparison of movement, habitat use and feeding in two spined blackfish and sympatric species of trout.	Dr Peter Pridmore
Louise Trickett	2009	The extent to which the Floating Fern <i>Azolla</i> impacts on the growth conditions of planktonic algae in floodplain water bodies.	Dr Roger Croome and Dr Phil Suter
Stephanie Zahra	2009	The effect of periodic flooding on soil condition and nutrients of a semi-arid floodplain forest.	Dr Gavin Rees
Adrian Clements	2009	Macroinvertebrate communities and the physico-chemical conditions in groundwater-fed bryophyte pools at Whiterock Creek, Bogong High Plains, Victoria, Australia.	Dr Ewen Silvester and Dr Phil Suter
Brigid Metcalfe	2009	The effect of aspect on the arthropod fauna beneath the bark of two species of eucalypt.	Dr Dennis Black
Stephanie Suter	2009	Aquatic fungi in an alpine stream of south-eastern Australia.	Dr Gavin Rees and Dr Ewen Silvester
Simon Maffei	2008	The effects of turbidity, prey density, and illumination on feeding in juvenile Murray cod.	Dr Peter Pridmore and Dr Rick Stoffels
Glenn Jeffrey	2008	Effects of temperature on the nitrification process at the Beechworth wastewater treatment plant.	Dr Warren Paul and Dr Gavin Rees
Alan Gundrill	2008	The response of a soil and pasture system to the application of untreated farm dairy effluent and commercial fertiliser.	Dr Roger Croome and Dr Ewen Silvester
Danielle Smith	2007	The effects of fire on wetland plant seeds and zooplankton eggs in Barren Box Swamp, NSW.	Drs Roger Croome & Daryl Nielsen

Diana Street	2007	A review of the status of an unusual population of freshwater crayfish of the genus <i>Euastacus</i> found in the East Buffalo River, Victoria.	Dr Susan Lawler
Tara Pitman	2007	Phylogenetic Analysis of the Australian Members of the Mayfly Family Caenidae (Insecta: Ephemeroptera)	Dr Phil Suter
Amy Boulding	2007	Effect of drying sediment microbial community structure of an Australian water storage during a drought.	Dr Phil Suter
Marijke Hoenderdos	2006	Spatial and temporal variation in the macroinvertebrate community of the Lower Murray Darling Basin Australia, between 1980 and 2000.	Dr Phil Suter
Michael Shackleton	2006	Diel periodicity in the macroinvertebrate communities of the Rose River, Victoria.	Dr Phil Suter
Shannon Slade	2006	The mallee woodland – chenopod shrubland ecotone and reptile biodiversity at Calperum Station, South Australia.	Dr Dennis Black
Rose Barrett	2006	The relationship between vegetation, water regimes and wetland type in wetlands of the Murray River floodplain.	Dr Roger Croome
Craig Hamilton	2005	Factors influencing the frequency and intensity of wild dog attacks on livestock within eastern Victoria.	Dr Peter Pridmore
Sarah Fergusson	2005	A study of the behaviours and time budgets of Pacific Gulls <i>Larus p. pacificus</i> breeding in the southern Furneaux Group, Tasmania.	Dr Catherine Meathrel
Sarie Los	2005	Association of Aquatic Macroinvertebrate Communities with alpine peatland pool vegetation of Watchbed Ck, Bogong High Plains, Victoria.	Dr Phil Suter
Mark Carey	2005	Factors affecting recruitment into the breeding population of Short Tailed Shearwaters <i>Puffinus tenuirostris</i> on Great Dog Island, Furneaux Group, Tasmania	Dr Cath Meathrel
Prue McGuffie	2005	The systematics of the Australian mayfly genus <i>Coloburiscoides</i> (Ephemeroptera: Coloburiscidae)	Dr Phil Suter and Dr Susan Lawler
James Wyatt	2004	Assessments of biological monitoring programs and their capacity to determine the impact of effluent discharge streams within North East Victoria.	Dr Phil Suter
Sarah Daniell	2004	Seed bank viability within floodplain wetlands Lake Hume to Barmah.	Dr Roger Croome

Joel Porter	2004	Seed production and germination in relation to the commercial production cycle of three grass species native to South-Eastern Australia.	Dr Peter Pridmore
Eleanor Bradbury	2004	Response of sequestrate fungi and mycophagous mammals to disturbance by fire.	Dr Dennis Black
Lucy Widdup	2004	The role of nest site selection on the reproductive success of eastern Pacific Gulls <i>Larus pacificus pacificus</i> breeding in the Furneaux Group, Tasmania.	Dr Catherine Meathrel
Margaret Lindsay	2004	The diet of eastern Pacific Gulls <i>Larus pacificus pacificus</i> in the southern Furneaux Group, Tasmania.	Dr Catherine Meathrel
Nathan Ning	2004	The impact of fire on aquatic macroinvertebrate communities of alpine <i>Sphagnum</i> peatlands on the Bogong High Plains, Victoria.	Dr Phil Suter
Simon Lukies	2004	Diet and foraging interactions between the native crimsonspotted rainbowfish (<i>Melanotaenia fluviatilis</i>) and the introduced mosquitofish (<i>Gambusia holbrooki</i>) in the Broken River of northeast Victoria.	Dr Peter Pridmore
Jessica Butler	2004	The composition and significance of the phytoneuston of floodplain water bodies.	Dr Roger Croome
Michelle Duimovich	2004	The impacts of the removal of coarse woody debris on terrestrial skinks and invertebrates in Killawarra Box-Ironbark Forest, Victoria.	Dr Dennis Black
Teisha Sloane	2004	The effects of fire on skinks in Chiltern - Mt. Pilot National Park, Victoria.	Dr Susan Lawler & Dr Dennis Black
Rachel Clancy	2003	Microinvertebrate emergence from egg banks in river benches of the Ovens river.	Dr Terry Hillman
Rachael Elso	2003	Space-for-time assessment of <i>Cryptozoan</i> communities in restored agricultural ecosystems in Byawatha, Victoria.	Dr Phil Suter
Jennifer Francis	2003	The effect of variable salinity on the development of eggs and larvae of anuran species in the Upper Murray river and its catchment.	Dr Phil Suter
Michelle Smith	2003	Environmental damage by <i>Ommatoiulus Moreleti</i> (The Portuguese Millipede) in the Warby Range, Victoria.	Dr Dennis Black
Matthew Vogel	2003	The effects of varying temperature and feeding levels on somatic and otolith growth in Murray Cod, <i>Maccullochella peelii peelii</i> (Mitchell) larvae.	Dr Phil Suter
Ross Templeton,	2002	Cotton Strip Assay's (CSA) as a utility for activity: relationships with soil chemistry and grazing intensity.	Dr Catherine Meathrel

Aaron Troy	2002	Effects of grazing on the physico -chemistry and biota in dams associated with travelling stock reserves in southern NSW.	Dr Phil Suter
Zeb Tonkin	2002	Behavioural & Morphological Studies of feeding in native freshwater fishes.	Dr Peter Pridmore
Karen Bowland	2001	Comparison of locomotor anatomy and climbing performance in tiger quoll (<i>Dasyurus Maculatus</i>) and feral Cat (<i>Felis Catus</i>).	Dr Peter Pridmore
Cassandra Bryce	2001	Habitat utilisation and foraging behaviour of aquatic invertebrates on an Alpine stream.	Dr Phil Suter
Kathie Kimpton	2001	Effects of grazing on invertebrates of the Bogong highplains.	Dr Dennis Black
Amanda Miggins	2001	Principles of Cleaner production as applied to selective wineries in the Rutherglen area.	Dr Percival Thomas
Kathryn Biesaga	2001	Nutrient balancing in dairy farms.	Dr Roger Croome and Dr Percival Thomas
Lynda Stuckey	2001	Comparative use of exotic and native riparian vegetation by adult stream insects.	Dr Phil Suter
Benjamin Holloway	2001	Breeding ecology of the threatened Pacific Gull <i>Larus pacificus</i> in the Furneaux Islands, Bass Strait, Tasmania.	Dr Catherine Meathrel
Geoff Heard	2001	Ecology of carpet python (<i>Marelia spilotes</i>).	Dr Dennis Black
Matthew Burt	2001	Waste minimisation in the Newsprint Industry.	Dr Percival Thomas
Chris Biesaga	2001	Development of an Environmental Overlay into the Rural City of Wangaratta's Planning Scheme.	Dr Catherine Meathrel and Dr Phil Suter
Kylie Durant	2001	Fire Ecology of Common Fringe myrtle (<i>Calytrix tetragona</i>) in Warby Range.	Dr Peter Pridmore
Paul McInerney	2000	The effects of inter-basin water transfer from the Snowy River to the Swampy Plain and Murray Rivers on the Ephemeroptera, Plecoptera and Trichoptera.	Dr Phil Suter

Paul Ratajczyk	2000	The distribution of the Ephemeroptera (Mayflies) along the Kiewa River in North East Victoria, Australia.	Dr Phil Suter
Deborah Gribben	2000	A study of the limnology, algae and phoyosynthetic bacteria of Norman's Lagoon.	Dr Roger Croome
Jennifer Burston	1999	Ecology of pest birds at Uncle Tobys, Wahgunyah.	Dr Catherine Meathrel
Robert Cook	1999	The effects of shading on biofilm biomass, macroinvertebrate density and macroinvertebrate community structure in the Murray and Darling Rivers at Wentworth.	Dr Phil Suter
Melanie Pearson	1999	Habitat occupation of the Baetidae (Insecta: Ephemeroptera) in the Rose River, Victoria.	Dr Phil Suter
Kathryn Oswald	1999	Groundwater interactions and effects of nitrogen and phosphorus addition.	Dr Phil Suter
Jarod Lyon	1999	The effect of size on the fast-start performances of three species of native Australian fish.	Dr Peter Pridmore
Annika Everaardt	1999	Studies of horizontal climbing in <i>Antechinus</i> and <i>Sminthopsis</i> (Marsupialia: Dasyuridae).	Dr Peter Pridmore and Dr Catherine Meathrel
Janelle Collinge	1999	Phylogcography of mayflies of the genus <i>Cloeon</i> of still waters within southeastern Australia.	Dr Susan Lawler and Dr Phil Suter
Brooke Margery-Barrett	1999	Genetic analysis of the genera <i>Nousia</i> and <i>Koorrnonga</i> (Ephemeroptera: Leptophlebiidae), using cellulose acetate protein electrophoresis.	Dr Susan Lawler
Jennifer Dwyer	1999	Spatial and Temporal Variation in Water Quality of House Creek, Wodonga.	Dr Percival Thomas
Louise McGeown	1999	Ant Harvesting of Wild Radish (<i>Raphanus raphanistrum</i>) Seed in Cropping Systems in South East Australia.	Dr Dennis Black
Glenn Shiell	1998	Aspects of the Physico-chemistry and Biology of Dartmouth Reservior in North Eastern Victoria.	Dr Roger Croome

Bernard Cockayne	1998	Postdrought macroinvertebrate recolonisation of a temperate seasonally flowing temporary river: Rose River Victoria.	Dr Phil Suter and Dr Susan Lawler
Ricci Churchill	1998	A retrospective assessment of gold mining in the Reedy Creek subcatchment, North East Victoria, Australia.	Dr Phil Suter and Dr Catherine Meathrel
Colleen Mullen	1998	Comparisons of biofilm growth on artificial substrata in static and fluctuating water levels in a weir pool in the Murray River.	Dr Phil Suter
Anthony Conallin	1998	Comparison of macroinvertebrate sampling techniques for the rapid bioassessment of lowland rivers.	Dr Phil Suter and Dr Catherine Meathrel
Kate Stuart	1998	The distribution and impact of Eastern Grey Kangaroos (<i>Macropus giganteus</i>) in the Warby Range, north-east Victoria.	Dr Catherine Meathrel and Dr Dennis Black
Rick Stoffels	1998	Habitat use of gudgeons in floodplain billabongs: the role of their interaction with perch and mosquitofish.	Dr Gerry Closs and Dr Susan Lawler
Sharon Reid	1998	Ecology of freshwater tortoises in billabongs of the River Murray.	Dr Catherine Meathrel
Nada Radford	1997	Ecology of freshwater tortoises in Lake Moodemere, Victoria.	Dr Catherine Meathrel
Fiona Copley	1997	Effect of excluding vertebrate predators on populations of the grasshopper <i>Acrida conica</i> Fabricius.	Dr Catherine Meathrel
Alexandra Olejniczak,	1997	Taxonomic identification and association of various species of <i>Cheumatopsyche</i> (Trichoptera, Hydropsychidae) using random amplified polymorphic DNA (RAPD) markers.	Dr Susan Lawler and Dr Phil Suter
Tamara Feehan	1997	The effect of beef feedlot manure applications on soil biology and chemistry.	Dr Catherine Meathrel
Jason Lieschke	1996	Trophic interactions between Australian smelt (<i>Retropinna semoni</i>) and zooplankton in a Murray River Billabong.	Dr Gerry Closs
Tim Curmi	1996	Habitat Use and Diet of River blackfish (<i>Gadopsis marmoratus</i>) and Two spined blackfish (<i>Gadopsis bisinosus</i>) in Tallangatta Creek.	Dr Gerry Closs

MASTERS

NAME	YEAR	TITLE	SUPERVISOR
Rebecca Hewlett.	2001	Classification of Victorian Streams: Implications of Taxonomic Resolution sample frequency and sample method.	Dr Phil Suter
Gregory Raisin	2000	The use of wetlands for the control of diffuse source pollution in rural catchments.	Dr Roger Croome

Fiona Betts	1996	Ecology of two Freshwater Decapod Species in a Murray River Billabong.	Dr Gerry Closs
Cindy Warburton	1996	The population structure, genetic diversity and reproductive biology of <i>Santalum Lanceblatum</i> .	Dr Helen Wallace
Mardi Versteegen	1995	The population structure of the murray river crayfish <i>Euastacus armatus</i> in the Murray and Murrumbidgee river systems	Dr Susan Lawler
Nicole Tabone	1995	Analysis of Genetic variation in <i>Pittosporum undulatum</i> Vent. (Pittosporaceae).	Dr Susan Lawler

PhD

NAME	YEAR	TITLE	SUPERVISOR
Mynott, Julia	2017	Larval taxonomy of some Australian stonefly species (Plecoptera: Gripopterygidae).	Dr Phil Suter Dr Susan Lawler Dennis Black
Klein, Annaleise Renate	2017	The role of the cyanobacteria toxin, Microcystin, in aqueous Iron biochemistry	Dr Ewen Silvester Dr Darren Baldwin
McInerney, Paul James	2017	Effects of invasive Willows (<i>Salix</i> spp.) on stream ecosystem dynamics.	Dr Phil Suter Dr Ben Gawne Dr Gavin Rees
Suter, Stephanie Gillian Anne	2015	Contribution of Aquatic Hyphomycete communities to leaf decomposition and food webs in Alpine streams.	Dr Ewen Silvester Dr Gavin Rees
Hawking, John Henry	2015	Systematics and ecology of the Australian Aquatic Moths, Acentropinae (Insecta: Lepidoptera).	Dr Phil Suter Dr Dennis Black
Michael Shackleton	2013	A morphological and molecular review of the taxonomy and phylogeny of Calocidae (Trichoptera : Insecta)	Dr Phil Suter Dr Jeff Webb Dr Susan Lawler

Mark Carey	2011	Effects of investigator disturbance on the reproductive success of short-tailed Shearwaters <i>Puffinus tenuirostris</i> .	Dr Cath Meathrel
Janice Laraine Kerr	2009	Fungi in lowland river floodplain ecosystems	Dr Ewen Silvester Dr Darren Baldwin
Nathan Ning	2008	Ecology of microinvertebrate fauna in a temperate Australian Floodplain River	Dr Phil Suter
Brendan Ebner	2008	A Numerical-Digestion Method for Estimating Zooplanktivory by a Fish Population.	Dr Phil Suter and Ben Gawne
Dale McNeil	2004	Ecophysiology and behaviour of Ovens River floodplain fish: hypoxia tolerance and the role of the physicochemical environment in structuring Australian billabong fish communities.	Dr Susan Lawler
Sarah Taylor	2003	Habitat use by White-Browed babblers pomatostomus superciliosus in Box – Ironbark forest in South East Australia'	Dr Catherine Meathrel
Gillian McDonald	2003	Development and testing of ecology model which quantifies current health status and attempts to predict restoration potential (under amended grazing strategies) of grassy woodlands of NSW South West slopes bioregion	Dr Catherine Meathrel
Stephen Balcolombe	2001	The association between carp gudgeons (<i>Hypseleotris</i> spp) and the giant rush (<i>Juncus ingens</i>) of a Murray River Billabong.	Dr Phil Suter
Syarifuddin	1999	The role of surface complexity of submerged logs and fish predation in structuring benthic invertebrate community in billabongs.	Dr Roger Croome Dr Phil Suter
Jacqueline Ann Griggs	1999	Taxonomic, biogeographical and genetic studies on Australian Chydorids.	Dr Roger Croome
Lor-Wai Tan,	1998	Taxonomy, microspatial and temporal variation of freshwater testate amoebae (Protozoa: Rhizopoda) on the submergent macrophyte, <i>Vallisneria gigantea</i> in the River Murray floodplain billabong.	Dr Phil Suter and Dr Gerry Closs

Department of Environmental Management and Ecology Albury-Wodonga Prizes and Awards

Year Conferred	Award	Citation	Recipient
1997	Australian Institute of Management Prize	Awarded for outstanding student achievement in the Graduate Diploma in Environmental Management and Ecology	Raymond Gear
2003			Heinz Kausche
2004			Gordon Cameron
2003	La Trobe University Undergraduate Scholarship for Commencing First Year Students		Wesley Webster
2007	Environmental Management and Ecology Second Year Prize	Awarded for outstanding academic achievement in the second year of the BSc in Environmental Management and Ecology	Stephanie Suter
2008			Annaleise Klein
2009			Slade Allen-Adkins
2010			Chloe Scammell
2011			Cassandra Bates
2012			Simon Mom
2013			Catherine Morrison
2014			Cassandra King
2015			Donna Sparkes
2009	Environmental Management and Ecology Scholarship	Awarded to commencing students in the BSc in Environmental Management and	Elise Eder

		Ecology	
2010			Steven Scammell Rhiannon Oates
1997	Australian Newsprint Mills Award	Awarded to the best first-year student in the BSc (Environmental Management and Ecology)	Kathryn Oswald
	Noske Skog Prize	Awarded to the best first-year student in the BSc in Environmental Management and Ecology	
2004			Amy Boulding
2005			Toby Alker-Jones
2006			Stephanie Suter
2007			Annaleise Klein
2009			Chloe Scammell
2010			Cassandra Bates
2011			Simon Mom
2012			Graeme Harris
2013			Cassandra King
2014			Donna Sparkes
1997	Soil and Water Conservation Association of Australia (NSW) Prize	Awarded to the outstanding student in two units that have a soil and water component within the BSc (Environmental Management and Ecology)	Rick Stoffels
2003	Australian Association of Natural Resource Management Prize	Awarded to the most outstanding third year student in two units that have a soil and water component within the BSc in Environmental Management and Ecology	Teisha Sloane
2004			Jessica Wilkie

2006	Esler & Associates Prize	Awarded to the most outstanding third year student in two units that have a soil and water component within the BSc in Environmental Management and Ecology	Ainslie Rosser
2007			Toby Alker-Jones
2008			Simon Mathei
2009			Annaleise Klein
2010			Slade Allen-Ankins
2011			Lauren Carr
2012			Cassandra Bates
2013			Simon Mom
2014			Catherine Morrison
2003	North East Catchment Management Authority Prize	Awarded to the student with the best overall performance in the third year of the BSc in Environmental Management and Ecology	Rachel Elso
2004			Mark Carey
2005			Shannon Slade
2006			Amy Boulding
2007			Toby Alker-Jones
2009			Annaleise Klein
2010			Slade Allen-Ankins
2011			Lauren Carr Chloe Scammell
2012			Cassandra Bates
2013			Simon Mom
2014			Catherine Morrison
2006	The Environmental Group Prize for Waste Water	Awarded to a third year student in the BSc in Environmental	Danielle Smith

	Management	Management and Ecology degree who has the highest aggregate marks in Environmental Pollution Control and Air and Water Quality in second year and who has a keen interest in waste water management	
2007			Heidi Josipovic
2008			Jonathon Thompson
2009			Matthew Fisher
2010			Terence Karis
2011			Timothy Joseph Coen Mitchell
2012			Simon Mom Jane White
2005	The John Hill Albury-Wodonga Campus Chemistry Prize	Awarded for the best overall performance in first year Chemistry at the Albury-Wodonga Campus by a student enrolled in the BSc in Environmental Management and Ecology	Toby Alker-Jones
2006			Heidi Josipovic
2007			Annaleise Klein
2009			Chloe Scammell
2008			
2010			Lauren Padbury
2011			Mary Anne Lisa-Holligan
2012			Catherine Morrison
2013			Matthew Bartlett
2014			Ceilidh Thomson Zeschke
2006	The La Trobe University,	Awarded to a first year Bachelor of	Renee Smith

	Grassland Society Scholarship	Agricultural Science student at the Albury-Wodonga Campus, based on academic merit and their interest in, and commitment to agriculture as a career	
2006	The North East Local Government Scholarship	Awarded to a first year Bachelor of Agricultural Science student at the Albury-Wodonga Campus, based on academic merit and their interest in, and commitment to agriculture as a career	Michael Gleadow
2006	The Peechelba Beef Scholarship	Awarded to a first year Bachelor of Agricultural Science student at the Albury-Wodonga Campus, based on academic merit and their interest in, and commitment to agriculture as a career	Michelle Merrett
1997	David Mant Memorial Prize-Wodonga Rotary Club	Awarded to the outstanding first-year BSc student	Regina Glass
2003	Hamilton Smith Rotary Scholarship for Environmental Studies	Awarded to a student who is studying the second year of the outstanding first BSc in Environmental Management and Ecology	Michael Shackleton

2004			Marijke Hoenderos
2005			Glenn Jeffrey
2006			Stephanie Zahra
2007			Emma Fuchsen
2009			Jenna Ludlow
2010			Karla Williams
2011			Jane White
2012			Catherine Morrison
2013			Farrah Emmett
2014			Calia Jones
2015			Kimberley Henman
2001	Albury-Wodonga Campus Medal	Awarded to high achieving, first year student who has made a significant contribution to the Albury-Wodonga community through study or extra curricular activity	Kylie Durant
2006			Craig Hamilton
2007			Toby Alker-Jones
2008			Amy Boulding
2009			Stephanie Suter
2012			Cassandra Bates
2013			Simon Mom
2007	City of Wodonga "Learning City" Prize	Awarded to a graduate who commenced study as a mature aged student and has demonstrated superior achievement and a contribution to life-long learning	Toby Alker-Jones
2008			Annaleise Klein
2009			Victoria McCartney
2010			Janine Box
2003	Albury-Wodonga Campus Erudition Prize		Aaron Troy

2004			Rachel Elso Jennifer Francis
2003	Vice-Chancellor's Undergraduate Scholarship	Awarded to students commencing studies at a regional campus of La Trobe University	Laura Scopel
2005	Dean's Medal	Awarded to the most outstanding student in the Faculty of Science, Technology and Engineering completing an undergraduate program (including Honours) who is from Albury-Wodonga Campus	Nathan Ning
2006			Amy Boulding
2007			Toby Alker-Jones Marijke Hoenderdos
2008			Amy Boulding
2009			Annaleise Klein
2010			Stephanie Suter
2011			Slade Allen-Ankins
2013			Simon Mom
2006	Dean's Honours List	Awarded for recognition of outstanding academic achievement in the Faculty of Science, Technology and Engineering	Toby Alker-Jones Amy Boulding Ainslie Rosser Stephanie Suter
2007			Annaleise Klein Stephanie Suter Toby Alker- Jones Elsie Nielsen Danielle Smith
2008			Slade Allen-Ankins Emma Hampton Annaleise Klein

			Stephanie Suter
2009			Terence Karis Elke Jasper Chloe Scammell Nadene Perry Janine Box Annaleise Klein Verita Stewart Karen Tymms
2010			Tracey Napper Elke Jasper Chloe Scammell Nigel Roberts Slade Allen- Ankins Janine Box Nadene Perry
2011			Simon Mom Rhiannon Oates Gayle South Cassandra Bates Elise Eder Lauren Carr Chloe Scammell
2012			Graeme Harris Simon Mom Gayle South Jane White Cassandra Bates Elise Eder Matthew Leach
2013			Catherine Morrison Simon Mom Rhiannon Oates Gayle South Jane White
2014			Catherine Morrison
2008	Albury City Student Scholarship	Awarded to talented students from the Albury- Wodonga region who are studying on the Albury- Wodonga Campus in the Department of Environmental	Adrian Clements

		Management and Ecology in the final year of study, and who has demonstrated their commitment to the future of their profession within the local community	
2009			Emma Hampton
2010			Chloe Scammell
2011			Georgia Dwyer
2012			Clayton Harris
2013			Simon Mom
2014			Cassandra King
2010	Albury City Leadership Scholarship	Awarded to talented students from the Albury-Wodonga region who are studying on the Albury-Wodonga Campus and have demonstrated their commitment to campus life and community leadership	Terence Karis
2011			Chloe Scammell
2014			Cassandra King
2015			Rebekah O'Keefe
2011	Lisa Malone Scholarship	Awarded to a student with evidence of commitment to social development wither in Australia or overseas	Cassandra Bates

3 DEME RESEARCH FUNDING (* Competitive)

Roger Croome

*1996 Land Water Resources Research and Development Corporation (LWRRDC)	
"A phytoplankton Methods Manual for Australian Rivers"	\$148,000
1991 Murray Darling Basin Commission (MDBC)	
"Phytoplankton dynamics in the Murray River"	\$75,000
*1998 National Eutrophication Management Program (NEMP)	
"A phytoplankton Methods Manual for Australian Freshwaters"	\$30,276
2007 eWater	
"Role of fungi in carbon cycling in floodplain wetlands"	\$34,531
2011 Murray Darling Basin Authority (MDBA) (with MDFRC)	
"River Murray water quality monitoring program: phytoplankton data trend analysis 1980-2008"	\$74,000

Susan Lawler

1995 National Science Foundation (NSF) with K. Crandall Bringham Young University	
"Molecular and morphological systematics of the Australian genera of Freshwater Crayfish (Decapoda: Parastacidae)"	\$13,500

Warren Paul

2007 North East Water	
"Upgrade of Beechworth Treatment Plant"	\$5,000
2006 North East Water	
"Water demand forecast for Wodonga"	\$6250
2011 Murray Darling Basin Authority (MDBA) (with MDFRC)	
"River Murray water quality monitoring program: phytoplankton data trend analysis 1980-2008"	\$74,000
2012 Murray Darling Basin Authority (MDBA) (with MDFRC)	
"Comprehensive review of the Mitta Mitta River monitoring data 1998-2008"	\$50,000
2012 Murray Darling Basin Authority (MDBA) (with MDFRC)	
"River Murray biological monitoring program review of monitoring 1980-2009"	\$130,000
2013 Murray Darling Basin Authority (MDBA) (with MDFRC)	
"Investigating the distribution and tolerances of macroinvertebrate taxa over 30 years in the River Murray"	\$55,000

*2009 Australian Institute of Nuclear Science and Engineering
"Use of 14-Carbon to constrain flow paths in the Murrumbidgee deep aquifers"
\$10,959

2010 North East Catchment Management
"Mt Buffalo Peatlands Ecological Risk Assessment – Water Quality Assessment Program"
\$40,909

2010 La Trobe University Research Grants Scheme
"Computational Methods in Aquatic Ecology"
\$10,400

*2010 Department of Environment and Heritage, Commonwealth Environment Research Facilities (CERF) (With MDFRC)
"Determining water regimes to protect floodplains under hyper-drought conditions"
\$1,134,883

2010 Murray Wetlands Working Group (With MDFRC)
"Minimising environmental damage from water recovery from inland wetlands: determining water regimes to minimise the impact of sulfidic sediments (potential acid sulfate soils)"
\$517,520

*2011 Australian Synchrotron (international access)
"Response of iron(Fe) mineralogy in floodplain soils to drought and flooding events"
\$4,665

*2012 Australian Synchrotron (international access)
"IR micro-spectroscopic analysis of Snowgum (*Eucalyptus pauciflora*) decomposition by aquatic fungi"
\$10,100

2013 Holsworth Wildlife Research Fund
"Fungal dynamics and carbon flow in Alpine streams"
\$18,000

Phil Suter

*1996 Land and Water Resources Research and Development Corporation "Illustrated key to the nymphs of the Australian Ephemeroptera Families Baetidae and Caenidae"
\$27,762

*1998 Natural Heritage Trust
"Determining the health of the Lachlan River"
\$79,994

*2002 Environment Australia
"Habitat Profiles of Australian Freshwater Macroinvertebrates"
\$180,000

2006 Murray Darling Basin Commission
"River Murray Biological Monitoring Program – Review of macroinvertebrate data"
\$9,000

*2007–2010 Commonwealth Environment Research Facility (CERF)
"21st Century Taxonomy: accelerating research and discovery of Australian biodiversity"
\$613,000

*2011 Australian Biological Resources Study (ABRS)
"Taxonomy of Australian Stoneflies"
\$60,000

2012 Murray Darling Basin Authority (MDBA) (with MDFRC)
"River Murray biological monitoring program review of monitoring 1980–2009"
\$130,000

2013 Murray Darling Basin Authority (MDBA) (with MDFRC)
"Investigating the distribution and tolerances of macroinvertebrate taxa over 30 years in the River Murray"
\$55,000

- Allen-Ankins, S., R. J. Stoffels, P. A. Pridmore & M. T. Vogel, 2012. The effect of turbidity, prey density and environmental complexity on the feeding of juvenile Murray cod *Maccullochella peelii*. *Journal of Fish Biology* 80:195-206.
- Auman, H. J., A. Bond & C. E. Meathrel, 2011. Anthropogenic feeding regimes from stable isotope analyses. *Waterbirds* 34:70-76.
- Auman, H. J., C. E. Meathrel & A. Richardson, 2008. Supersize me: Does anthropogenic food change in the body condition of silver gulls? A comparison between urbanized and remote, non-urbanized area. *Waterbirds* 31(1):122-126.
- Balcombe, S. R. & G. P. Closs, 2000. Variation in Carp Gudgeons (*Hypseleotris* spp.) catch rate in dense macrophytes. *Journal of Freshwater Ecology* 15:389-395.
- Balcombe, S. R. & G. P. Closs, 2004. Spatial relationships and temporal variability in a littoral macrophyte fish assemblage. *Marine and Freshwater Research* 55(6):609-617.
- Balcombe, S. R., G. P. Closs & P. J. Suter, 2007. Density and distribution of epiphytic invertebrates on emergent macrophytes in a floodplain billabong. *River Research and Application* 23(8):843-857.
- Balcombe, S. R. & P. Humphries, 2006. Diet of the weatern carp gudgeon (*Hypseleotris klunzinger* Ogilby) in an Australian floodplain lake: the role of water stability. *Journal of Fish Biology* 68:1484-1493.
- Baldwin, D. S. & A. N. Boulding, 2008. Developing a monitoring strategy for phytoplankton community structure in a large water-storage reservoir: Lake Mulwala, Australia. *Lakes and Reservoirs, Research and Management* 13(3):221-229.
- Baldwin, D. S., H. Gigney, J. S. Wilson, G. Watson & A. N. Boulding, 2008a. Drivers of water quality in a large water storage reservoir during a period of extreme drawdown. *Water Research* 42(19):4711-4724.
- Baldwin, D. S., G. N. Rees, G. Watson & J. Williams, 2008b. The potential of sediment microbial community structure as either a target or an indicator for the restoration of degraded aquatic ecosystems - preliminary results from a creek affected by in-stream sand accretion. *Ecological Management and Restoration* 9(2):156-159.
- Baldwin, D. S., J. Wilson, H. Gigney & A. Boulding, 2009. Influence of extreme drawdown on water quality downstream of a large water storage reservoir *River Research and Application*.
- Barrett, R., D. L. Nielsen & R. Croome, 2010. Associations between the plant communities of floodplain wetlands, water regime and wetland type. *River Research and Application* 26:866-876.

- Bibi, I., B. Singh & E. Silvester, 2011a. Akaganeite (b-FeOOH) precipitation in inland acid sulfate soils of south-western New South Wales (NSW), Australia. *Geochimica et Cosmochimica Acta* 75:6429-6438.
- Bibi, I., B. Singh & E. Silvester, 2011b. Dissolution study of illite in saline-acidic solutions at 25°C. *Geochimica et Cosmochimica Acta* 75:3237-3249.
- Bibi, I., B. Singh & E. Silvester, 2014. Dissolution of soilclays in sulfuric acid solutions: Ionic strength and temperature effects. *Applied Geochemistry* 51.
- Birt, M. P. & P. R. Thomas, 2002. Analysis of the hydrocyclone stock cleaning process for wasted fibre in a paper mill. *Journal of Cleaner Production* 10:573-579.
- Black, D., 2005. Terrestrial invertebrates of the Pennefather River area. Royal Geographical Society of Queensland, Geography Monograph Series Gulf of Carpentaria Scientific Study Report(10):93-95.
- Black, D. G. & P. A. Pridmore, 2010. Some observations on the temporal activity of nocturnal small vertebrates and large invertebrates in three habitats of Cravens Peak Station in south-western Queensland.:83.
- Boulding, A. & D. S. Baldwin, 2009. Assessing the impacts and potential control of terrestrial plant colonization of a reservoir bed during an extreme drawdown event. *Lakes and Reservoirs, Research and Management* 14:21-30.
- Boulding, A. N., G. N. Rees, D. S. Baldwin, P. J. Suter & G. O. Watson, 2008. Changes in sediment microbial community structure within a large water-storage reservoir during an extreme drawdown event. *Marine and Freshwater Research* 59(10):890-896.
- Bradley, J. S. & C. E. Meathrel, 2006. Prediction of individual reproductive success in short-tailed shearwaters, *Puffinus tenuirostris*. *Acta Zoologica Sinica* 52:91-95.
- Broadhurst, B. T., J. G. Dyer, B. C. Ebner, J. D. Thiem & P. A. Pridmore, 2011. Response of two-spinned blackfish, *Gadopsis bispinosus*, to environmental flows. *Hydrobiologia* (B).
- Butler, J., R. Croome & G. N. Rees, 2007. The composition and importance of the phytoneuston in two floodplain lakes in south-eastern Australia. *Hydrobiologia* 579:135-145.
- Carey, M. J., 2010. Predation of Short-tailed Shearwater eggs on Great Dog Island, Tasmania. *Australian Field Ornithology* 27:59-64.
- Carey, M. J., 2011a. Incubation routine, foraging trip duration and body mass regulation in Short-tailed Shearwaters. *Emu*.
- Carey, M. J., 2011b. Intergenerational transfer of plastic debris by Short-tailed Shearwaters (*Ardenna tenuirostris*). *Emu*.
- Carey, M. J., 2011c. Investigator disturbance reduces reproductive success in Short-tailed Shearwaters *Puffinus tenuirostris*. *Ibis*.
- Carey, M. J., C. E. Meathrel & N. A. May, 2009. A new method for long-term attachment of data-loggers to shearwaters (Procellariidae). *Emu* 109:310-315.
- Carey, M. J., R. A. Phillips, J. R. D. Silk & S. A. Shaffer, 2014. Trans-equatorial migration of Short-tailed Shearwaters revealed by geolocators. *Emu* 114:352-359.

- Carr, E., H. Eason, S. Feng, A. Hoogenraad, R. Croome, J. Soddell, K. Lindrea & R. Seviour, 2001. RAPD-PCR typing of *Acinetobacter* isolates from activated sludge systems designed to remove phosphorus microbiologically. *Journal of Applied Microbiology* 90:309-319.
- Churchill, R. C., C. E. Meathrel & P. J. Suter, 2004. A retrospective assessment of gold mining in the Reedy Creek sub-catchment, northeast Victoria, Australia: residual mercury contamination 100 years later. *Environmental Pollution* 132:355-363.
- Clements, A. R., 2009. Macroinvertebrate communities and the physico-chemical conditions of Alpine bryophyte pools on the Bogong High Plains. Honours, La Trobe University.
- Clements, A. R., P. J. Suter, M. Fussell & E. Silvester, 2016. Macroinvertebrate communities in spring-fed alpine source pools. *Hydrobiologia* 777:119-138.
- Cornforth, R., G. Rees, R. Croome & D. Baldwin, 2004. Bacterial abundance and extracellular enzyme activity in the surface microlayer of Normans Lagoon, near Albury, New South Wales. In Nghiem, L., L. Scott, M. M. Dennis & K. Murphy (eds) *Environmental Edge 8th Annual Environmental Research Conference*. University of Wollongong Press, Wollongong, 145-151.
- Crandall, K. A., J. W. Fetzner, S. H. Lawler, M. Kinnersley & C. M. Austin, 1999. Phylogenetic relationships among the Australian and New Zealand genera of freshwater crayfishes (Decapoda: Parastacidae). *Australian Journal of Zoology* 47:199-214.
- Cruse, L., S. O'keefe & J. Burston, 2007. Including block tariffs for urban water. *Agenda* 14(69-80).
- Croome, R. & P. R. Thomas, 2001. The use of reclaimed water for irrigation: some issues. *Water* 28:53-56.
- Croome, R. L. & K. A. Mikrjukov, 2000. A study of the species composition of heliozoa (Protista) in frozen reservoirs. *Vestnik Mosk Univ Ser 16, Biology* 16:31-36.
- Dean, J. C. & P. J. Suter, 1996. Mayfly Nymphs of Australia: A guide to genera. Identification Guide No. 7. Co-operative Research Centre for Freshwater Ecology, Albury.
- Dean, J. C. & P. J. Suter, 2004. Descriptions of new species and a new genus of leptophlebiid mayflies (Insecta: Ephemeroptera) from the Northern Territory, Australia. *Memoirs of the Museum of Victoria* 61(1):111-118.
- Dwyer, G. K., R. J. Stoffels & P. A. Pridmore, 2014. Morphology, metabolism and behaviour of three fishes with different lifestyles to acute hypoxia. *Freshwater Biology* 59:819-831.
- Ebner, B., 2006. Murray cod an apex predator in the Murray River, Australia. *Ecology of Freshwater Fish* 15:510-520.
- Ebner, B. C., R. R. J. McAllister & P. Suter, 2009a. Effects of sample size on numerical estimates of diel prey consumption in a fish population. *New Zealand Journal of Marine and Freshwater Research* 43:579-590.
- Ebner, B. C., O. Scholz & B. Gawne, 2009b. Golden perch *Macquaria ambigua* are flexible spawners in the Darling River, Australia. *New Zealand Journal of Marine and Freshwater Research* 43:571-578.

- Edney, G. N., D. M. McNeil & S. H. Lawler, 2002. The swamp yabby (*Cherax* sp) of the Murray River Catchment. *The Victorian Naturalist* 119:200-204.
- Fraser, M., D. S. Baldwin, G. N. Rees, E. Silvester & K. Whitworth, 2012. Rehabilitation options for inland waterways impacted by sulfidic sediments - Field trials in a south-eastern Australian wetland. *Journal of Environmental Management* 102:71-78.
- Glover, F., K. Whitworth, P. Kappen, D. Baldwin, G. Rees, J. Webb & E. Silvester, 2011. Acidification and buffering mechanisms in acid sulfate soil (ASS) wetlands of the Murray-Darling Basin, Australia. *Environmental Science and Technology* 45(7):2591-2597.
- Grey, I., C. Macrae, E. Silvester & J. Susini, 2005. Behaviour of impurity elements during weathering of ilmenite. *Mineralogical Magazine* 69:437-446.
- Gribbens, D. L., G. N. Rees & R. Croome, 2002. Development of substantial populations of anoxygenic phototrophic bacteria and aerobic phototrophs in Normans Lagoon, a "billabong" adjacent to the Murray River, South-eastern Australia. *Lakes and Reservoirs, Research and Management* 8:95-104.
- Hadwen, W. L., C. S. Fellows, D. P. Westhorpe, G. N. Rees, S. M. Mitrovic, B. Taylor, D. S. Baldwin, E. Silvester & R. Croome, 2009. Longitudinal trends in river functioning: Patterns of nutrient and carbon processing in three Australian rivers *River Research and Applications*.
- Hazlett, B. A. & S. Lawler, 2010. Responses to conspecific and heterospecific disturbance odours in the Australian crayfish *Euastacus armatus* and *Cherax destructor*. *Marine and Freshwater Behaviour and Physiology* 43:197-202.
- Hazlett, B. A., S. Lawler & G. Edney, 2007a. Agonistic behavior of the crayfish *Euastacus armatus* and *Cherax destructor*. *Journal of Marine and Freshwater Behaviour and Physiology* 40:257 - 266.
- Hazlett, B. A., S. Lawler & G. Edney, 2007b. Agonistic behavior of the crayfish *Euastacus armatus* and *Cherax destructor*. *Marine and Freshwater Behaviour and Physiology* 40:257-266.
- Heard, G. W., D. Black & P. Robertson, 2004. Habitat use by the inland carpet python (*Morelia spilota metcalfei*: Pythonidae) : Seasonal relationships with habitat structure and prey distribution in a rural landscape. *Austral Ecology* 29:446-460.
- Heard, G. W., P. Robertson, D. Black, G. Barrow, P. Johnson, V. Hurley & G. Allen, 2006. Canid predation: a potentially significant threat to relic populations of the Inland Carpet Python *Morelia spilota metcalfei* (Pythonidae) in Victoria. *Victorian Naturalist* 123:68-74.
- Hillman, T., L. Crase, B. Furse, J. Ananda & D. Mayberry, 2005. Multidisciplinary approach to natural resource management. *Hydrobiologia* 552:99-108.
- Hubbard, M. D., P. J. Suter & I. C. Campbell, 2001. Catalogue of the Australian Mayflies. In. <http://www.famu.org/mayfly/australia/ausintro.html>.
- Jones, B. A., C. E. Meathrel & M. C. Calver, 2004. Hypotheses arising from a population recovery of the Western Ringtail Possum (*Pseudocheirus occidentalis*) in fire regrowth patches in a stand of *Agonis flexuosa* trees in south-western Australia. In Lunney, D. (ed) *Conservation of Australia's forest fauna* 2nd Edition. Royal Zoological Society of New South Wales, Mossman NSW, 656-662.

- Kerr, J. L., D. S. Baldwin, M. J. Tobin, L. Puskar, P. Kappen, G. N. Rees & E. Silvester, 2013. High spatial resolution infrared micro-spectroscopy reveals the mechanism of leaf lignum decomposition by aquatic fungi. *PLoS ONE* 8 e60857. doi:10.1371/journal.pone.0060857.
- Klein, A. R., D. Baldwin & E. Silvester, 2013. Proton and iron binding by the cyanobacterial toxin Microcystin-LR. *Environmental Science and Technology* 47.
- Klein, A. R., E. Silvester & C. F. Hogan, 2014. Mediated electron transfer between FE-II absorbed onto Hydrous Ferric Oxide and a working electrode. *Environmental Science and Technology* 48:10835.
- Lappin, A. J., C. M. Scammell, L. M. Carr & C. E. Meathrel, 2010. Terrestrial vertebrate fauna assessment for ecological impact assessment. *Pacific Conservation Biology* 15:289-290.
- Laurance, W. F., B. Dell, S. M. Turton, M. J. Lawes, L. B. Hutley, H. McCallum, P. Dale, M. Bird, G. Hardy, G. Prideaux, B. Gawne, C. R. McMahon, R. Yu, J.-M. Hero, L. Schwarzkopf, A. Krockenberger, S. A. Setterfield, M. Douglas, E. Silvester, M. Mahony, K. Vella, U. Saikia, C.-H. Wahren, Z. Xu, B. Smith & C. Cocklin, 2011. The ten Australian ecosystems most vulnerable to tipping points. *Biological Conservation*.
- Lawler, S., 2000. Australian freshwater crayfish: Yabbies or crays? . *Trees and Natural Resources* 42:12-13.
- Lawler, S. H. & K. A. Crandall, 1998. The relationship of the Australian Freshwater crayfish genera *Euastacus* and *Astacopsis*. . *Proceedings of the Linnean Society of New South Wales* 119:1-8.
- Lindsay, M. C. M. & C. E. Meathrel, 2008. Where, when and how? Limitations of the techniques used to examine dietary preference of Pacific Gulls (*Larus pacificus*) using non-consumed parts of prey and regurgitated pellets of prey remains. *Waterbirds* 31(4):611-619.
- McCafferty, W. P., M. D. Meyer, R. P. Randolph & J. M. Webb, 2008a. Evaluation of mayfly species originally described as *Baetis* Leach (Ephemeroptera: Baetidae) from California. *Proceedings of the Entomological Society of Washington* 110:577-591.
- McCafferty, W. P., R. D. Waltz & J. M. Webb, 2008b. *Acentrella nadineae*, a new species of small minnow mayflies (Ephemeroptera: Baetidae). *Proceedings of the Entomological Society of Washington* 111:12-17.
- McCartney, V. A., E. Silvester, J. W. Morgan & P. J. Suter, 2013. Physical and chemical drivers of vegetation in groundwater-source pools on the Bogong High Plains, Victoria. *Australian Journal of Botany* 61:566-573.
- McGuffie, P. J., 2005. The systematics of the Australian mayfly genus *Coloburiscoides* (Ephemeroptera: Coloburiscoides). Honours, (Unpublished Honours thesis, La Trobe University).
- McInerney, P. J., 2000. The effects of inter-basin water transfer from the Snowy River to the Swampy Plain and Murray Rivers on the Ephemeroptera, Plecoptera and Trichoptera. Honours, La Trobe University.
- McNeil, D. G. & G. P. Closs, 2007. Behavioural responses of a south-east Australian floodplain fish community to gradual hypoxia. *Freshwater Biology* 52:412-420.

- Meathrel, C., P. Suter & A. Dwyer, The misuse of electronic resources by tertiary, science students. In: New Learning Technologies Conference, Wodonga, Victoria, 1998.
- Meathrel, C. E., 2009. Variation in eggs and the period of rapid yolk deposition of the silver gull *Larus novaehollandiae* during a period of protracted laying season. *Journal of Zoology*(223):501-508.
- Meathrel, C. E. & M. J. Carey, 2007. How important are intrinsic factors to natal recruitment in Short-tailed Shearwaters *Puffinus tenuirostris*? *Journal of Ornithology* 148(Supplement 2):385-393.
- Meathrel, C. E. & S. Reid, 2007. Dietary preferences of captive Eastern Long-necked Turtles *Chelodina longicollis*. *Victorian Naturalist* 124(3):163-166.
- Meathrel, C. E., P. J. Suter & N. M. Radford, 2002. Niche segregation between three species of freshwater turtle in a large billabong during flood. *The Victorian Naturalist* 119(4):160-173.
- Meathrel, C. E., P. J. Suter & S. Reid, 2004. Habitat and dietary preferences of freshwater turtles in ephemeral billabongs on the Ovens River, north-east Victoria. *Victorian Naturalist* 121:4-14.
- Mitrovski, P., D. A. Heinze, A. A. Broome, A. A. Hoffman & A. R. Weeks, 2007. High levels of variation despite genetic fragmentation in populations of the endangered mountain pygmy-possum, *Burramys parvus*, in alpine Australia. *Molecular Ecology* 16:75-87.
- Musgrave, R. J. & M. S. Fussell, 2011. A snapshot of palaeosecular variation during the Kiaman Superchron: a 1150 year record from glacial varves of the Seaham Formation, New South Wales. *Australian Journal of Earth Science*.
- Mynott, J. H., Preliminary key to the larvae of *Riekoperla* (Plecoptera: Gripopterygidae). In: The Third TRIN Taxonomy Workshop, La Trobe University, Albury-Wodonga, 2011. TRIN Taxonomy Research and Information Network p1-11.
- Mynott, J. H., 2015. Mitochondrial DNA allows the association of life stages to facilitate species recognition and delimitation in Australian stoneflies (Plecoptera : Gripopterygidae : *Newmanoperla*). *Invertebrate Systematics* 29:223-238.
- Mynott, J. H., J. M. Webb & P. J. Suter, 2011. Adult and larval associations of the alpine stonefly genus *Riekoperla* McLellan (Plecoptera: Gripopterygidae) using mitochondrial DNA. *Invertebrate Systematics* 25:11-21.
- Nielsen, D. L., E. W. Jasper, N. S. P. Ning & S. Lawler, 2015. High sediment temperatures influence the emergence of dormant aquatic biota. *Marine and Freshwater Research* 66.
- Ning, N., D. L. Nielsen, T. J. Hillman & P. J. Suter, 2008. Evaluation of a new technique for characterising resting stage zooplankton assemblages in riverine slackwater habitats and floodplain wetlands. *Journal of Plankton Research* 30:415-422.
- Ning, N. S. P., D. L. Nielsen, T. J. Hillman & P. J. Suter, 2010a. The influence of planktivorous fish on zooplankton communities in riverine slackwaters. *Freshwater Biology* 55(2):360-374.
- Ning, N. S. P., D. L. Nielsen, T. J. Hillman & P. J. Suter, 2010b. The influence of planktivorous fish on zooplankton resting-stage communities in riverine slackwater regions. *Journal of Plankton Research* 32(4):411-421.

- Ning, N. S. P., D. L. Nielsen, W. L. Paul, T. J. Hillman & P. J. Suter, 2009. Microinvertebrate dynamics in riverine slackwater and mid-channel habitats in relation to physico-chemical parameters and food availability. *River Research and Application* 26:279-296.
- Oldroyd, B. P., S. Lawler & R. H. Crozier, 2006. Do feral honey bees (*Apis mellifera*) and regent parrots (*Polytelis anthopeplus*) compete for nest sites? *Austral Ecology* 19:444-450.
- Oldroyd, B. P., E. G. Thexton, S. H. Lawler & R. H. Crozier, 1997. Population demography of Australian feral bees (*Apis mellifera*). *Oecologia* 111:381-387.
- Paoletti, M. G., G. H. R. Osler, A. Kinnear, D. G. Black, L. J. Thompson, A. Tsitsilas, D. Sharley, S. Judd, P. Neville & A. D'Inca, 2007. Detritivores as indicators of landscape stress and soil degradation. *Australian Journal of Experimental Agriculture* 47(4):412-423.
- Parker, D., R. Hlasny & J. M. Webb, 2008. Biodiversity and adult emergence periods of mayflies (Ephemeroptera) inhabiting Candle Lake, SK. *Blue Jay* 66(2):96-104.
- Patrick, F., 2011. Cracking of cumene on tungsten promoted ceria catalysts. *Reaction Kinetics, Mechanisms and Catalysis*.
- Paul, W. & N. S. Barnett, 2003. Monitoring biosolids quality: A statistical perspective. *Water* 30(2):92-96.
- Paul, W. & N. T. Diamond, 2001. Designing a monitoring program for environmental regulation: Part II - Melbourne Water case study. *Water* 29(1):33-36.
- Paul, W. L., 2011. A causal modelling approach to spatial and temporal confounding in environmental impact studies. *Environmetrics*.
- Paul, W. L. & P. A. Taylor, 2008. A comparison of occupant comfort and satisfaction between a green building and a conventional building. *Building and Environment* 43(11):1858-1870.
- Pridmore, P. A., 2001. The origin of asymmetrical gait in synapsid vertebrates - evidence from monotremes, Mesozoic mammals and trackways. In Bartsch, U. Z. a. P. (ed) *Origin and Evolutionary Transformation of Mammals - Using Biological Signals in Understanding Earth History*. Wiley-VCH, Berlin/Museum fur Naturkunde, 1435-1935.
- Pridmore, P. A. & D. G. Black, 2010. Some observations on the biology of the desert shovelfoot frog (*Notaden nichollsi*) in south-western Queensland.:277.
- Pridmore, P. A. & P. H. Hoffman, 2014. The aerodynamic performance of the feathertail glider, *Acrobates pygmaeus* (Marsupialia: Acrobatidae). *Australian Journal of Zoology* 62:80-99.
- Pridmore, P. A., T. Rich, P. Vickers-Rich & P. Gambaryan, 2005. A tachyglossid-like humerus from the early Cretaceous of south-eastern Australia. *Journal of Mammalian Evolution* 12:359-378.
- Saffer, V. M., J. S. Bradley, R. D. Wooller & C. E. Meathrel, 2000a. The effect of human activity on the growth rates of Short-tailed Shearwater *Puffinus tenuirostris* chicks. *Emu* 100(1):49-53.
- Saffer, V. M., J. S. Bradley, R. D. Wooller & C. E. Meathrel, 2000b. Patterns of growth in nestling Short-tailed Shearwaters *Puffinus tenuirostris*. *Emu* 100(1):42-48.

- Seamer, D. & R. Croome, 2007. Observations of testate amoebae (Rhizopoda, Protozoa) from a Sphagnum bog in Jackey's Marsh, Northern Tasmania. *Papers and Proceedings of the Royal Society of Tasmania* 141:197-202.
- Shackleton, M., 2010. Two new species of *Pliocaloca* Neboiss (Trichoptera: Calocidae) from eastern Australia, with descriptions of the immature stages of one species. *Zootaxa* 2476:30-38.
- Shackleton, M., 2013. New species of *Caloca* Mosely (Trichoptera: Calocidae) from eastern Australia. *Memoirs of Museum Victoria* 70:1-10.
- Shackleton, M. E. & J. M. Webb, 2013. A new description and association of a larva with the adult male of *Pliocaloca fidesria* Shackleton (Insecta: Trichoptera: Calocidae) from eastern Australia. *Memoirs of the Queensland Museum - Nature* 56(2):593-600.
- Shackleton, M. E., J. M. Webb, S. H. Lawler & P. J. Suter, 2014. A new genus and species of Calocidae (Trichoptera: Insecta) from south eastern Australia. *Memoirs of Museum Victoria* 72:25-30.
- Shull, H. C., M. Pérez-Losada, D. Blair, K. Sewell, E. A. Sinclair, S. Lawler, M. Ponniah & K. A. Crandall, 2005. Phylogeny and biogeography of the freshwater crayfish *Euastacus* (Decapoda: Parastacidae) based on nuclear and mitochondrial DNA. *Molecular Phylogenetics and Evolution* 37(1):249-263.
- Silvester, E., 2009. Ionic regulation in an alpine peatland in the Bogong High Plains, Victoria, Australia. *Environmental Chemistry* 6:424-431.
- Silvester, E., L. Charlet, C. Tournassat, A. Gehin, J.-M. Greneche & E. Liger, 2005. Redox potential measurements and Mossbauer spectrometry of Fe^{II} absorbed onto Fe^{III} (oxyhydr)oxides. *Geochimica et Cosmochimica Acta* 69:4801-4815.
- Silvester, E. J., W. J. Bruckard & J. T. Woodcock, 2011a. Surface and chemical properties of chlorite in relation to its flotation and depression. *Mineral Processing and Extractive Metallurgy*.
- Silvester, E. J., G. W. Heyes, W. J. Bruckard & J. T. Woodcock, 2011b. The recovery of sericite in flotation concentrates. *Mineral Processing and Extractive Metallurgy*.
- Suter, P., P. Goonan, J. Neill & T. Thompson, 1998. Taxonomic Discrimination and Taxonomic Sufficiency in Wetland Monitoring. In Banens, R. J. & R. Lehané (eds) *Proceedings of the Riverine Environment Forum 1996*. Murray Darling Basin Commission, Brisbane, Queensland, 29-38.
- Suter, P. & J. Webb, 2012a. Key to the mature nymphs of *Ameletoides* (Ephemeroptera : Nesameletidae). In: Suter, P. (ed) *Taxonomy Research and Information Network Taxonomic Workshop 2012*. La Trobe University, Wodonga Victoria, 1-11.
- Suter, P. & J. Webb, 2012b. Key to the mature nymphs of *Mirawara* (Ephemeroptera : Ameletopsidae). In: Suter, P. (ed) *Taxonomy Research and Information Network Taxonomic Workshop 2012*. La Trobe University, Wodonga, Victoria, 1-11.
- Suter, P. & J. Webb, 2012c. Key to the mature nymphs of *Tasmanophlebia* (Ephemeroptera: Oniscigastridae). Paper presented at the Taxonomy Research and Information Network (TRIN) Taxonomic Workshop held January 31st - February 1st 2012, La Trobe University, Albury-Wodonga, January 31st-February 1st.

- Suter, P., J. Webb & D. Rowe, 2009. Key to the mature nymphs of *Coloburiscoides* (Lestage) (Ephemeroptera: Coloburiscidae). Museum of Victoria Science Reports 14:1-24.
- Suter, P. J., 1997. Preliminary Guide to the identification of nymphs of Australian Baetid Mayflies (Insecta : Ephemeroptera) found in flowing waters. Identification Guide No. 14. Co-operative Research Centre for Freshwater Ecology, Albury.
- Suter, P. J., 1999a. Illustrated Key to the Australian Caenid Nymphs (Ephemeroptera: Caenidae). Cooperative Research Centre for Freshwater Ecology, Albury.
- Suter, P. J., 1999b. *Irpacaenis*, a new genus of Caenidae (Ephemeroptera) from Australia. Australian Journal of Entomology 38(3):159-167.
- Suter, P. J., 2000. *Edmundsiops hickmani* sp. nov., *Offadens frater* (Tillyard) nov. comb. and description of the nymph of *Cloeon tasmaniae* Tillyard (Ephemeroptera: Baetidae) from Tasmania. Papers and Proceedings of the Royal Society of Tasmania 134:63-74.
- Suter, P. J., 2001. *Platybaetis gagadjuensis*, a new species from Northern Australia (Ephemeroptera: Baetidae). In Dominguez, E. (ed) Trends in Research in Ephemeroptera and Plecoptera. Kluwer Academic/Plenum Publishers, New York, 359-364.
- Suter, P. J., D. Cartwright, J. Dean, K. Sutcliffe, C. Bryce, P. Davies & A. Pinder, 2006. Habitat profiles of selected Australian aquatic insects.
- Suter, P. J. & J. H. Hawking, 2002. Aquatic invertebrates of the Murray River. The Victorian Naturalist 119(4):186-200.
- Suter, P. J. & P. J. McGuffie, 2007. Conservation of mayflies (Ephemeroptera) especially *Coloburiscoides* in the Victorian Alps: impediments and threats. Victorian Naturalist 124:273-277.
- Suter, P. J. & J. H. Mynott, 2013. The first record and description of a male imago of *Austremerella picta* Riek (Ephemeroptera: Ephemereleididae). Australian Entomologist 40(4):237-242.
- Suter, P. J. & M. J. Pearson, 2001. Redescription of *Bungona* Harker with new synonyms in the Australian Baetidae (Insecta: Ephemeroptera). Memoirs of Museum Victoria 58(2):247-254.
- Suter, P. J., R. St. Clair, J. Hawking & C. Bryce, 2002. Aquatic macroinvertebrates from streams in the Mt. Kosciuszko area. In Green, K. (ed) Biodiversity in the Snowy Mountains. National Parks and Wildlife Service, Australian Institute of Alpine Studies, Jindabyne, Australia, 90-97.
- Suter, S. G., G. N. Rees, G. O. Watson, P. J. Suter & E. Silvester, 2011. Decomposition of native leaf litter by aquatic hyphomycetes in an alpine stream of south-eastern Australia Marine and Freshwater Research 62:841-849.
- Taylor, P., 2000. Charles Sturt University goes solar. Solar Progress 21:11.
- Taylor, P., 2002. Comparison of adaptive thermal comfort strategies of office workers in a free running building, and a HVAC building during summer in inland Australia. In Luther, M. B. (ed) ANZAScA Modern Practice of Architectural Science: From Pedagogy to Andragogy. Australian and New Zealand Architectural Science Association, Geelong, 505-512.
- Taylor, P. & M. B. Luther, 2003. Evaluating rammed earth walls: a case study. Solar Energy 76:79-84.

- Taylor, P., M. B. Luther & D. J. Rowe, 2003. A scale-model room as a practical teaching experiment. In Charters, L. A. a. B. (ed) ANZSES Destination Renewables. Australian and New Zealand Solar Energy Society, Melbourne, 545-554.
- Taylor, S. G., 2008. Leaf litter invertebrate assemblages in box-ironbark forest: composition, size and seasonal variation in biomass. *Victorian Naturalist* 125(1):19-27.
- Taylor, S. G. & W. L. Paul, 2006. Minimal diurnal change in foraging time in an Australian passerine, the white-browed babbler *Pomatostomus superciliosus*. *Journal of Avian Biology* 37:527-531.
- Taylor, S. G. & I. Taylor, 2005. Foraging behaviour of Pied Oyster Catchers in the presence of Kleptoparasitic Pacific Gulls. *Waterbirds* 28:156-161.
- Thoms, M., P. Suter, J. Roberts, J. Koehn, G. Jones, T. Hillman & A. Close, 2000. Report of the River Murray Scientific Panel on Environmental Flows. River Murray - Dartmouth to Wellington and the Lower Darling River. Murray-Darling Basin Commission, Canberra, 168.
- Tonkin, Z. D., P. Humphries & P. A. Pridmore, 2006. Ontogeny of feeding in two native and one alien fish species from the Murray-Darling Basin, Australia. *Environmental Biology of fishes* 76:303-315.
- Webb, J. M. & W. P. McCafferty, 2008. Adjustments to the species nomenclature in Heptageniidae (Ephemeroptera). *Proceedings of the Entomological Society of Washington* 110:525-527.
- Webb, J. M. & P. J. Suter, 2010a. New combinations for the Australian species of *Baetis* (Ephemeroptera: Baetidae) with a new synonym. *Zootaxa* 2668:63-65.
- Webb, J. M. & P. J. Suter, 2010b. Revalidation and redescription of *Bungona illiesi* (Lugo-Ortiz & McCafferty) (Ephemeroptera: Baetidae) from Australia, based on mitochondrial and morphological evidence *Zootaxa* 2481:37-51.
- Webb, J. M. & P. J. Suter, 2011. Identification of larvae of Australian Baetidae. *Museum of Victoria Science Reports* 15:1-24.
- Whiting, A. S., S. H. Lawler, P. Horwitz & K. A. Crandall, 2000. Biogeographical regionalization of Australia: assigning conservation priorities based on endemic freshwater crayfish phylogenetics. *Animal Conservation* 3:155-163.
- Whitworth, K., E. Silvester & D. S. Baldwin, 2014. Alkalinity capture during microbial sulfate reduction and implications for the acidification of inland aquatic ecosystems. *Geochima et Cosmochima Acta* 130:113-125.
- Young, W. J., J. H. Harris, J. Roberts, C. B. Schiller & T. J. Hillman, 2001a. River flow, processes, habitat, and river life. In Young, W. J. (ed) *Rivers as Ecological Systems: The Murray Darling Basin*. Murray Darling Basin Commission, Canberra, 45-99.
- Young, W. J. & T. J. Hillman, 2001. A tale of two rivers. In Young, W. J. (ed) *Rivers as Ecological Systems: The Murray Darling Basin*. Murray Darling Basin Commission, Canberra, 101-131.
- Young, W. J., J. Roberts, C. B. Schiller & T. J. Hillman, 2001b. The rivers of the basin and how they work. In Young, W. (ed) *Rivers as Ecological Systems: The Murray Darling Basin*. Murray Darling Basin Commission, Canberra, 3-43.

ADDITIONS TO DEME PUBLICATIONS LIST

Hill, J. O., 2006. Correlations of Aquatic Chemistry, Water Quality and Aquaculture. Proceedings of the International Conference on Coastal Oceanography and Sustainable Marine Aquaculture (ICCOSMA 2006), pp 9.

Ananda, J., Domazetis, G. and Hill, J. O., 2009. A Roadmap to a green chemical industry in Australia, J. Environmental Development & Sustainability, 11: 1051 – 71.

Hill, J. 2010. Science Education must inform and influence Climate Change policy. ChemEd. NZ, 118: 9 – 13.

Mustafa, S. and Hill, J., 2011. Green World Order: Delaying the doom in a changing climate. Lambert Academic Publishing, Saarbrücken, 110pp. [ISBN: 978-3-8443-2193-7]

Mustafa, S. and Hill, J. 2011. A curriculum framework for a tertiary sustainability course. ChemEd NZ, 124: 12 – 22.

Mustafa, S. and Hill, J. 2011. Natural Resources Management and Food Security in the context of sustainable development. Sains Malaysiana, 40 (12): 1331- 40.

Hill, J., Kumar, K. K. and Verma, R., 2013. Challenges for Chemical Education: Engaging with Green Chemistry and Environmental Sustainability. 'The Chemist' (Journal of the American Institute of Chemists), 86 (1): 24 – 31.

Hill, J. and Kumar, K. K., 2015. The Development, Implementation and Quality Assurance of a tertiary course on Carbon-Neutral Fuels, Energy and Environmental Sustainability. Chem. Educator, 20: 157 – 66.

This listing is not exhaustive but only includes those graduates who have remained in touch with staff of the Department. Some government departments have changed their names, but those listed are correct from when the graduates were employed. Where a number is given in brackets after a listing this refers to the number of graduates employed by that organization.

Commonwealth Government Departments

Murray Darling Basin Commission
 Murray Darling Basin Authority (3)
 CSIRO Plant Horticulture
 Federal Police Brisbane
 Bureau of Meteorology
 MDBA Director Water Trading
 Commonwealth Department of Agriculture and Water Resources Director
 Environmental Research Institute of the Supervising Scientist Jabiru NT
 Commonwealth Department of Environment, Heritage and Sport
 Commonwealth Department of Agriculture and Water Resources Canberra
 Commonwealth Environmental Water Office Dubbo
 Department of Economic Development, Jobs, Transport and Resources. Leading
 Biosecurity Officer

State Government Departments

Victoria

Department of Primary Industries Rutherglen Victoria (3)
 Arthur Rylah, Melbourne Victoria (3)
 Environmental Protection Authority (EPA) Wangaratta
 Environmental Protection Authority (EPA) Melbourne
 Department of Environment, Land, Water and Planning Bendigo
 Department of Environment, Land, Water and Planning Ballarat Weeds
 Department of Environment, Land, Water and Planning Wodonga Officer/GIS
 Support
 Landcare Coordinator Mildura
 Landcare Coordinator Bacchus Marsh
 Parks Victoria Beechworth
 Environmental Protection Authority (EPA) Bendigo

New South Wales

NSW Department of Primary Industries
 NSW Health Department, Human Resources Albury
 Landcare Coordinator Upper Murray
 NSW Department of Primary Industries Environmental Scientist
 NSW Fisheries Narrandera
 NSW Department of Environment and Heritage Dubbo

Riverina Highlands Regional Revegetation Plan Project Manager
Australasian Association of Zoological Parks and Aquaria at Taronga Zoo
Murray Local Lands Services Community Engagement

Queensland

Department of Primary Industries Queensland
Department of Natural Resources Brisbane
Department of Primary Industries Brisbane
Queensland Parks and Wildlife Services Cape York

ACT

Department of Urban Services ACT

South Australia

Environmental Coordinator Clare Valley SA
Australian Landscape Trust SA

Catchment Management Authorities and Water Authorities

Murray Catchment Management Authority Albury
North East Water (9) Environmental Officer Wodonga, Wangaratta
Soil Chemist Lower Murray-Darling Catchment Management Authority
Goulburn Broken Catchment Management Authority Benalla, Manager Water Resources
Mallee CMA Mildura
NE Water Tallangatta Sewage Treatment plant operator
North East Catchment Management Authority (3)
Murray Goulburn Water Shepparton (2)
Mallee Catchment Management Authority Natural Resource Project Officer
Western Water Gisborne Water Quality Technologists
Goulburn Murray Water Tatura (now NE Water Authority)
North West Water Authority Tasmania
Murray Irrigation Natural Resources Policy Analyst
Murray Valley Catchment Authority Albury (4)
Corangamite Catchment Management Authority Geelong
NevRwaste Wangaratta (4)

Local Government

Wodonga City Council Environmental Planner
Albury City Council
Albury City Council Waterview Waste Water Treatment Works (2)
Benalla City Council Environmental Officer
Benalla City Council Sustainability and Water Management
Corowa Council Environmental Officer
Indigo Shire Town Planning
Wodonga City Council
Redland City Council

Education

Primary Teaching
Teaching, Gaylon College Wangaratta Victoria
Education Officer Underwater World Brisbane Queensland
TAFE Teaching
Teacher at Thalgarrah EEC University of New England
Teacher Wodonga (2)
Teacher Tallangatta HS
Teacher Wodonga HS Science Coordinator
Teacher Wodonga Primary
Teacher at Catholic College Wodonga
Teacher, Beechworth HS
Teacher Melbourne
Questacon Canberra
Teacher St Augustines Kyabram
Charles Sturt University Laboratory (3)
La Trobe University Aboriginal Liaison Wodonga

Private Enterprise and Consultants

AgroFresh, Shepparton Victoria
Australian Water Technology
SPC Shepparton Environmental Officer
SKM Consultants
Noske Skog Albury
Moore Pty Ltd Wodonga
Geofabrics Albury
Private Consultant (2)
Biosis Consultants Sydney
Electrical Chemical Company Hobart
Australian Country Choice Environmental Standards Officer
EarthTech Wodonga
Private Enterprise Albury
Maunsell Australia Pty Ltd
GHD Consultants Geelong
Snowy Mountains Engineering Corporation (SMEC)
EcoTech Carrum
EGL Wodonga Treatment Planr
Xylem Water Solutions Australia
Australian Laboratory Services, Environmental Melbourne
Brett Lane and associates Pty Ltd Environmental Consultants Carlton
Abbie Group Environmental Officer
Environmental Consultant Beechworth
Microbiology Laboratory Technician Sydney
Naturecall Environmental

Research

CSIRO Research Scientist at MDFRC
Murray Darling Freshwater Research Centre Mildura (3)
Murray Darling Freshwater Research Centre Wodonga (9)
UNESCO, M&E and Science Coordinator
Postdoctoral Fellow USA
Royal Adelaide Hospital Oncology

International

Thames Water London
Anglian Water UK
Zespri International Tauranga New Zealand

Others

McCrae Holden
Lawyer Wodonga
Victorian Farmers Federation Regional Manager

DEME SELECTED FIELD ACTIVITIES

Phillip Island



Students with Dr. Cath Meathrel and Dr. Mark Carey with short tailed shearwater.



Quadrat sampling at Red Rocks, Phillip Island



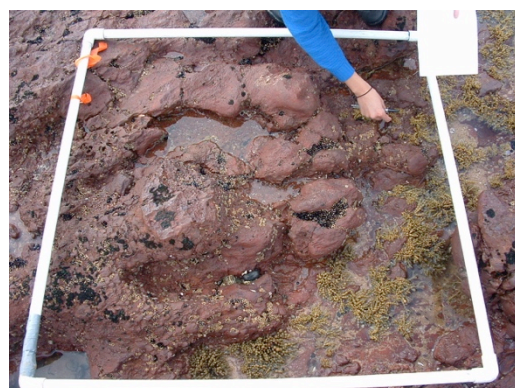
Cape Woolamai, Philip Island



Little Penguin



Woolamai wave platform



Quadrat sampling at Red Rocks



Penguin rookery at Philip Island



Quadrat sampling at Woolamai wave platform

Freshwater Ecology



Dr. Phil Suter demonstrating sampling techniques.



Students sampling in stream.

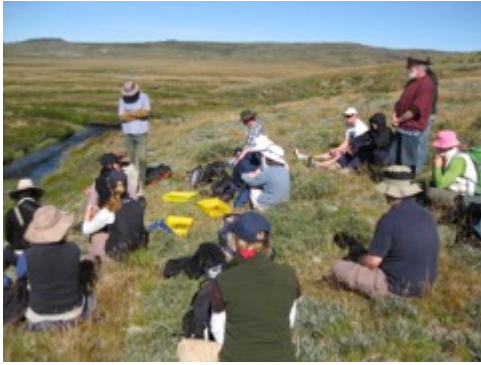


Students sampling stream macroinvertebrates



Stream edge sampling for aquatic macroinvertebrates

Alpine Ecology



Stream ecology theory in the field



Pygmy Possum



Vegetation in peatlands



Geology of the High Plains–
'Ruined Castle'



Dean Heinz and friend



Collecting terrestrial invertebrates



Sorting aquatic macroinvertebrate samples



Alpine pavement morphology



Bogong Moth habitat, Mt McKay



Alpine stonefly, endangered species



Dr. Peter Pridmore and students discussing Alpine vegetation adaptations



Dr. Ewen Silvester examining the flower of a trigger plant



Identifying aquatic macroinvertebrates



Identifying terrestrial invertebrates with Dr. Dennis Black



Sampling leaf litter in alpine vegetation communities

Research in the Alps





Aquatic Research in an extreme environment

Dubbo Zoo – Conservation Ecology



Students with Dr. Cath Meathrel observing the rare and endangered Przewalski horses native to the steppes of central Asia.



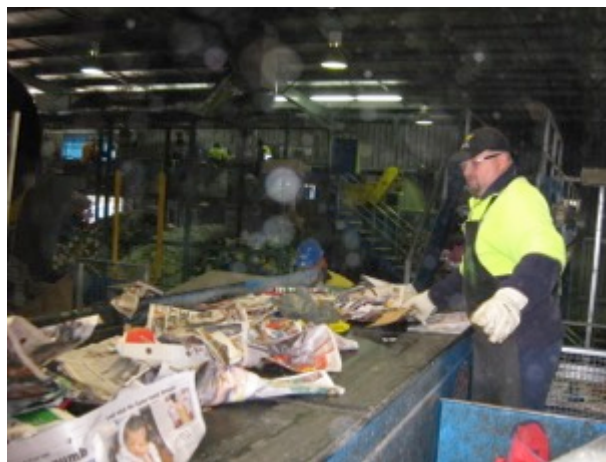
Conservation by Taronga Zoos.

Resource Management – Forestry



Harvesting of plantation pines at Shelley

Waste Management



Recycling at Cleanaway

DEME Research Laboratory: Albury-Wodonga campus



Martin Fussell, John Hill, David Finlay, ?, Rheinhard Beissbarth and Phil Suter.



Rheinhard Beissbarth, Ewen Silvester
Martin Fussell.



Dr. Ewen Silvester, Sarie Los
and Dr. Pettina Love



Dr. Dennis Black and Dean Heinz



Dean Heinz, Dr. Dennis Black, Craig Hamilton,
Aaron Troy, Dr. Nathan Ning and Nick May

Banner Photo



Third year students (2012) with Dr Ewen Silvester (DEME), Dr Gavin Rees (MDFRC) and Dr Darren Baldwin (MDFRC) sampling the sulphitic sediments in wetlands at Bottle Bend on the Murray River.

Title: 'The Life & Times of La Trobe's Department of Environmental Management & Ecology: A reflective review'

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Authors: John Hill and Phil Suter

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LA TROBE DEME HISTORY PROJECT
SUPPLEMENT DECEMBER 2018

EMERITUS SCHOLAR CONFERMENT



Phil Suter was appointed Emeritus Scholar in 2013 in recognition of his teaching, learning and research achievements in DEME and his contributions to the wider University and his liaison with natural resource management authorities in the Border region. His citation read:

'Dr. Suter has made significant contributions to the Albury/Wodonga campus, driving innovative and unique research, fostering important industry partnerships and identifying and mentoring future scientists in our community. He is a distinguished specialist in taxonomy and ecology. As a taxonomist, Dr. Suter has lead studies into the naming and identification of aquatic invertebrates, mayflies in particular. As an ecologist, he has researched Alpine bogs and temporary streams and has monitored their water quality. His research has been supported by numerous (competitive) research grants and he has in excess of 50 peer-reviewed publications in national and international scientific journals.'

Dr. Suter has held senior management positions of Head of the Department of Environmental Management and Ecology and Director of the La Trobe University Research Centre for Applied Alpine Ecology. Dr. Suter was also instrumental in attracting the relocation of the Murray Darling Freshwater Research Centre to the Wodonga campus in 2003.

On the basis of his multiple career achievements in teaching, research and outreach, he is judged to be most worthy of Emeritus Scholar accreditation'.

ASSOCIATE PROFESSOR PROMOTION



Susan Lawler was promoted to Associate Professor in 2017. She has an outstanding teaching record as demonstrated by consistently positive student feedback, six teaching awards from La Trobe University and the Australian Learning and Teaching Council and she has been featured on the 'Lecturer of the Year' website. Over the course of her career she has supervised 6 PhD students and 16 Honours students to completion.

Also, she has attracted several national competitive research grants including two ARC Discovery Grants. Her research has had impacts in policy at the State and National levels. The results from the Bogong moth research has changed the focus of conservation research in the Australian alpine region as has her research on the Murray crayfish in both Victoria and New South Wales. Her research students have moved on into high profile employment in ecology and environmental management positions both in government and research institutions.

As Head of the Department of Environmental Management and Ecology from 2010 to 2015, she oversaw the complete overhaul of the Environmental Management and Ecology degree, including the development of two highly popular field-based courses that combined a month of online learning with residential excursions to the Victorian alps and the semi-arid region of South Australia.

In addition, she has a national media profile as a public scholar with significant outputs in newspapers and in radio and television outlets. She has over 80 published articles for 'The Conservation' website and she has in excess of 30 publications in international peer-reviewed scientific journals.

On the basis of her career achievements in teaching, learning, research and outreach, she was deemed to be most worthy of promotion to Associate Professor.



Terry Hillman was Director of the Murray Darling Freshwater Research Centre from 1994 – 2001 and a member of the NE Catchment Management Authority (NECMA) for 10 years. In retirement he continues to provide technical advice to the Murray Darling Basin Authority and to Commonwealth and State Government departments responsible for natural resource management, catchment management authorities and water industry groups.

He was appointed Adjunct Professor in DEME in 2001 in recognition of his outstanding career in freshwater ecology research and his contributions to the teaching and research programmes of DEME since its inception in 1991 and for his key negotiations with CSIRO and the Commonwealth Government for funding to relocate MDFRC from Charles Sturt University (Thurgoona) to La Trobe University – Wodonga in 2003.

In 2003, he was awarded an Honorary DSc by La Trobe University for his research in freshwater ecology and his contributions to catchment management strategies in the Murray-Darling Basin.

ADDITIONAL PhD GRADUATION



Deme postgraduates: Vicky McCartney and Julia Mynott

Julia Hagger Mynott was supervised by Phil Suter (DEME) and graduated with PhD in 2018. Her thesis title was 'Larval Taxonomy of some Australian stonefly species (Plecoptera: Gripopterygidae)'. Her citation read:

'The thesis explored the taxonomy of the Family 'Gripopterygidae' in Australia with focus on the taxonomy of the larval life-stage. A large disparity exists in the knowledge of larval forms when compared to the adult taxonomy with 51% of gripoptergid species having undescribed larva. The importance of stoneflies (Plecoptera) as an indicator group for monitoring aquatic ecosystems means that knowledge of the larval taxonomy and the ability to identify species is essential.'

THE SNRM INITIATIVE

The La Trobe Regional Review of 2002 recommended that the Wodonga Campus establish a Centre for Sustainable Natural Resource Management in view of the teaching and research strengths in environmental management in DEME and, in particular, the water quality management expertise of the MDFRC. Water pricing and water management research in the Department of Business and sustainable society research in the Department of Social Sciences would also be important contributors to the proposed centre.

As Head of Campus at this time, John Hill developed a strategic plan for establishing this centre based on the multi-disciplinary principles of SNRM. This plan subsequently became a template for integrating teaching and research in environmental sustainability at the Wodonga campus. The key elements of this plan subsequently formed the basis of a publication: 'A curriculum framework for a tertiary sustainability course', John Hill and Saleem Mustafa, ChemEd NZ, 124 12 - 22 (2011). Many applications of this plan followed, the most significant of which was a Year 1 single unit course entitled 'Climate, Sustainability and Society', established in 2009 and involving teaching contributions from DEME, Social Sciences and Business.

A brief history of MDFRC and its transition to the Centre for Freshwater Ecosystems

(An invited essay from **Terry Hillman** who was MDFRC Director from 1994-2002)

In December 1973 a make-shift laboratory was set up in a hut at Bandiana Army Base (near Wodonga), tasked with carrying out base-line physico-chemical and biological monitoring which, in turn, would support research into the risks to the River Murray ecosystem from accelerated urban and industrial development planned for Albury Wodonga. It was led by Roger Croome, later to become a foundation staff member of La Trobe University Department of Environmental Management and Ecology (DEME) based at the Wodonga campus. A team of four continued this work and, in 1980, were relocated to a purpose-built facility, the Peter Till Laboratory on the Thurgoona campus of Charles Sturt University.

In mid-1986 the decision was made to establish the Murray Darling Freshwater Research Centre (MDFRC). This was the main outcome of a private members bill tabled by Ralph Jacobi (then federal member for Hawker, SA), which led to a federal government enquiry into the needs for freshwater research in Australia. The establishment of the Centre was championed by Mr. Jacobi, Keith Lewis (Chair, Australian Water Research Advisory Council and Bill Williams (Professor of Zoology, Adelaide University) and by Leo Devin (Assistant Secretary, Land and Water Recourses Branch, federal Department of Primary Industries and Energy). The Centre was managed by a board comprised of representatives of its major support organisations including funding partners, Murray Darling Basin Commission (MDBC, later Authority), Albury Wodonga Development Corporation (AWDC) and Land and Water Resources Research and Development Corporation (LWRRDC). CSIRO, an 'in-kind' contributor, was also represented. A Technology Transfer and Research Advisory Committee, consisting of senior researchers and water managers, was also established. The four staff-members of the Peter Till Laboratory were joined by four people from CSIRO, including the newly appointed Director of MDFRC, David Mitchell. By 1990, the staff had grown to 25 and research capacity had been augmented to include bacterial, algal, zooplankton, and plant ecology, and nutrient and carbon cycling. As well as their significance in terms of knowledge needs, these research areas were seen as enhancing MDFRC's capacity to collaborate with research partners – including DEME.

Increased critical mass resulted in a wider pool of expertise in many aspects of freshwater science in the region. A series of in-house seminars and public 'outreach' programs such as 'science-in-the-pub' were commenced and scientists from MDFRC became involved in supervision of post-graduate students enrolled in DEME.

At the time, several government authorities, including MDBC, were establishing biological monitoring programs based on aquatic invertebrates. Unfortunately, taxonomic knowledge was patchy and confined mainly to isolated individual academics. For monitoring purposes taxa were usually differentiated, to whatever taxonomic level was achievable, on the basis of 'reference' specimens identified by a code. Neither the codes nor the taxonomic skills available were consistent amongst the monitoring programs and MDFRC set up a series of annual workshops in 1989, under the leadership of John Hawking, with the modest aim of ensuring that the codes and degree of taxonomic differentiation were uniform across the various data sets. The taxonomic workshop series was remarkably successful and, with the growing participation of leading specialist taxonomists including Phil Suter (DEME) and Russell Shiel (MDFRC) produced a large body of original work and field guides.

In 1990-91 the five-year seeding funds contributed by AWRAC (later Land and Water Resource Research Development Corporation [LWRRDC]) came to its planned end. This presented some challenges to the core funding of the Centre, even though competitive research grants, won by researchers at MDFRC, far exceeded the amount.

In 1993 a consortium of water resource managers and research organisations, including MDFRC and La Trobe University (LTU) - through DEME - were successful in their bid to form the Cooperative Research Centre for Freshwater Ecology (CRCFE), and MDFRC and DEME became "official" research partners. Being members of the CRCFE 'family' was particularly rewarding for post-graduate students as they joined a network of some 35 fellow students across the CRC, participated in workshops and seminar series (and an annual CRCFE meeting/conference), and were encouraged to establish co-supervision with industry partners and non-academic CRCFE researchers. DEME staff continued to contribute to CRCFE projects in such areas as insect and crustacean taxonomy and algal ecology. In 1994, Terry Hillman was appointed as the Director of MDFRC.

A perceived lack of a research presence in the lower parts of the Basin resulted in community pressure to locate MDFRC researchers at Mildura. Activity coordinated by Brian Grogan (Murray Darling Association) led to the raising of around \$100,000 p.a. which was matched by CRCFE, together with in-kind support from Lower Murray Water and research funding from NSW Department of Land and Water Conservation enabled the inauguration of the MDFRC Lower Basin Laboratory with a research staff of six. After several temporary homes the laboratory was accommodated in purpose-built facilities on the Mildura campus of LTU, which was the start of closer day-to-day interaction between the two entities.

In 2000, the landlords of the MDFRC head office in Thurgoona (Charles Sturt University) foreshadowed a substantial rise in rent (with no prospect of negotiation). Roger Croome, then Head of DEME, raised the possibility of relocating MDFRC to the Wodonga campus of La Trobe. Reassessment of regional development scheduling raised significant funds but fell short by about \$1M for a purpose-built facility to house MDFRC at Wodonga. The shortfall was resolved by a one-off grant arranged through the then Assistant Treasurer, Senator Rod Kemp, in response to a well-articulated proposal from Graham McDowell, La Trobe University Deputy Vice-chancellor (Research) and facilitated by the then local member, Ms Sophie Mirabella. The new building was named the 'Nancy Millis building' in honour of her long-standing commitment as Chair of the MDFRC Board and its perennial advocate, and provided state-of-the-art teaching laboratories for DEME and accommodated research laboratories, administration and offices for MDFRC which relocated to Wodonga in February 2003. In addition to occupying the state of the art research laboratories in the Nancy Millis building, MDFRC was given access to meeting/seminar facilities on the Wodonga campus and its substantial library resources were integrated with those of the campus held in the David Mann

Library. At this stage, DEME and MDFRC had reached a high degree of collaboration and integration of research and in this context, the collaborations of Dr Warren Paul, Dr Ewen Silvester and Dr Phil Suter with MDFRC on the ecology of the Australian Alps and the Ovens River are noteworthy. In particular, the long-term definitive collaboration project of Warren Paul and Phil Suter with MDFRC staff on the monitoring of macroinvertebrate communities of the Murray River has recently been published. Also, co-supervision of honours and higher degree students had become the norm and to further encourage DEME/MDFRC collaborations, a limited number of honours scholarships were made available annually after the relocation.

Terry Hillman resigned as Director in 2002 and Ben Gawne was appointed as the new Director of MDFRC.

In line with the CRC protocol, the CRCFE ceased operation in 2005 after one extension of funding. In order to maintain the impetus of the research, CSIRO, MDBA, and LTU established an un-incorporated joint venture, keeping the name 'Murray Darling Freshwater Research Centre'. In 2014, changes in legislation [Financial Management and Accountability Act (1997)] precluded MDBA from contributing further to MDFRC core funding, thereby restricting future funding from MDBA to project-based transactions and restricting the Authority's capacity to act as a joint venture partner. Consequently, in 2015, LTU assumed the role of 'Centre Agent' of a joint venture between CSIRO and LTU and Ben Gawne resigned as Director of MDFRC and Gavin Rees was appointed as interim Director until Nick Bond was appointed in 2016. Finally, in 2018, this joint venture was dissolved, with CSIRO and LTU continuing to collaborate in the newly named entity the (LTU) Centre for Freshwater Ecosystems (CFE), which is incorporated in the School of Life Sciences and embraced the Wodonga and Mildura facilities and personnel. Most of the remaining DEME staff were co-located with staff in the CFE. This new centre is headed by Nick Bond and builds on the enduring legacy of the MDFRC, both in terms of the impact of the latter on policy and management of Murray-Darling basin ecosystems and also its established roles in education and training, raising community awareness associated with conserving rivers and wetlands and in fostering collaborative research activities with a range of partners at both State and Commonwealth levels. In late 2018 the CFE Mildura laboratory was closed due to a downward trend in funding to support water research. Despite this closure, the CFE Wodonga laboratory remains committed to strengthening its regional capacity to undertake high quality research relevant to the water sector, and to continue to liaise with water managers and policy makers to support effective and sustainable river and wetland management strategies. This commitment has already been demonstrated by the appointment of new staff, all with teaching and research expertise in areas relevant to the teaching, learning and research objectives of the CFE.

Thus, to some extent, the research undertaken in DEME, at least in aquatic ecosystems, continues within the CFE. Research that was based in MDFRC and DEME separately in 1986 is being built on and extended 32 years later by the current group of scientists at the CFE. The same can be said for post-graduate enrolments in environmental management which have markedly increased over this time frame. In the future it is hoped that LTU-Wodonga, via the CFE, can again produce graduates which provide wise and informed husbandry of the vital water resources of our region and of our nation and be recognised nationally as a leading authority in natural water resources and the sustainable management thereof.



La Trobe University Wodonga Campus c 2003 showing accommodation for DEME in the Michael J. Osbourne Building and accommodation for MDFRC in the Nancy Millis Building.

END NOTE

The release of this supplement concludes the DEME History Project. We gratefully acknowledge the contributions and support of many of our colleagues with respect to our efforts to record the rich history of the Department of Environmental Management and Ecology and in our attempts to preserve and highlight the memorable achievements of its staff and students over its 24 year life-span.

(John Hill and Phil Suter)