

Chapter 5

Education

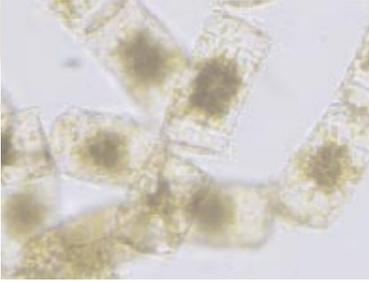


Photo: Jason Sonneman

Leaders

**Assoc Prof Richard Norris,
University of Canberra**

**Dr Ian McKelvie,
Water Studies Centre, Monash**

The CRCFE's Education Program aims to provide high quality education at the community (including primary and secondary schools), undergraduate and postgraduate levels that provides a strong comprehensive ecological framework for the sustainable management of freshwater resources.

Its specific objectives include:

- To provide postgraduate education that produces ecologists and related scientists with high level research skills who are sought after to work in the water industry.
- To contribute to undergraduate education programs to ensure graduates have sound ecological knowledge and an appreciation of its application to water management, and that graduates are employable within the natural resource area. To ensure students are aware of opportunities within the water area.
- To assist community groups to understand water related issues, and help equip them to take an active role in land and water management.
- To build community awareness of water ecology and related environmental issues through a program of public and school-based education.

- To contribute to the ongoing development of professionals working in the water industry through continuing education programs that update their knowledge and skill base.

During the year, Dr Ian McKelvie took on the position of Deputy Education Program leader to increase representation at the CRCFE's Melbourne sites. The appointment will give Monash University students greater access to the Centre's educational activities.

5.1

Postgraduate education

Highlights of the program this year include:

- The CRCFE has 45 students at the PhD level and 11 at the Masters level. Of these, 31 are fully or partly supported by the CRCFE. During the year, 12 students completed their postgraduate theses.
- The CRCFE assists students to attend conferences and seminars. Last year 20 students presented papers and posters at the Australian Society for Limnology's annual conference. Support was also provided to four PhD students to attend an overseas conference.
- The CRCFE supported one student to attend the Aquatic Ecology Postgraduate Workshop which was held at the Queenscliff Marine Research Station in

Victoria. The two-day workshop, part-sponsored by the CRCFE and attended by 25 students from throughout Australia, provides a forum through which students can share ideas, problems and exchange expertise.

- Sam Lake and Peter McKeough presented a session on *Writing a thesis* at the above workshop. Sam and Gerry Quinn presented a seminar on this topic to postgraduates within the Biological Sciences department at Monash University.
- The Philosophy of Science workshop, presented by Dr Peter Fairweather from CSIRO Land and Water, Griffith, and organised in conjunction with the Plant Science and the Vertebrates Pest Control CRCs, was attended by nine CRCFE students.
- Three students were supported to attend the CRCFE-AWWA Catchment Management School held in February at the University of Canberra.
- PhD Student Daryl Nielsen made it to the final round of the CRC Water Forum's Young Scientist of the Year Award. Daryl was one of four finalists and presented a paper on *Water Level Fluctuation in Experimental Billabongs: Permanent and Ephemeral*.
- Several CRCs got together and arranged for the CSIRO-BHERT group to present a four-day program for PhD students and post-doctorates. Sabine Schreiber and Michael Shirley (PhD students) attended from the CRCFE. The course was run at the Melbourne University Business School. The students subsequently carried out projects related to involving postgraduates more in the life of the CRC.
- A formal workshop is held each year at the University of Canberra and Monash University to induct students into the CRC. The aim is to help new entrants to better understand the CRC and its

PhD student Sabine Schreiber discovered that the exotic snail, *Potamopyrgus antipodarum*, thrives in degraded aquatic systems where it can maintain high population densities. Photo: S. Morten

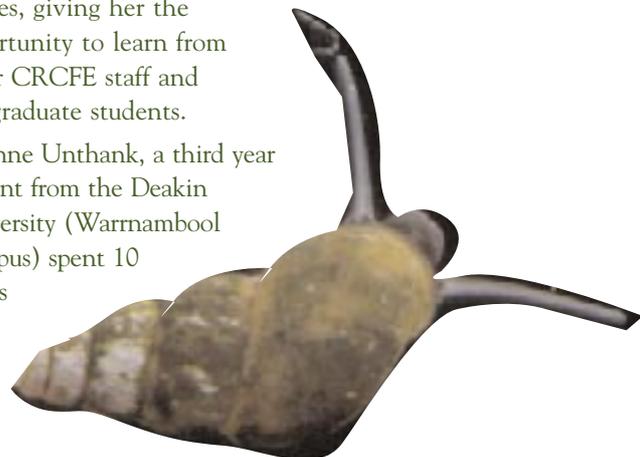


PhD student Daryl Nielsen was a finalist in the CRC Water Forum's Young Scientist of the Year Award. He presented his work on *Water level fluctuation in experimental billabongs* at the WaterTECH 98 in Brisbane. Photo: Gerard Vaughan, CRC Water Quality and Treatment

operations as well as the resources and facilities available. An induction manual containing a directory and outline of the Centre's objectives, programs and policies is provided to all new students.

5.2 Undergraduate

- Undergraduate teaching takes place at Monash University, University of Canberra and La Trobe University.
- Sue Nichols, employed by the CRCFE while undertaking her undergraduate degree, took out the University of Canberra's Eric Best Memorial prize for best overall performance in Resource, Environmental and Heritage Science. Sue believed her work experience at the CRCFE was beneficial to her studies, giving her the opportunity to learn from other CRCFE staff and postgraduate students.
- Suzanne Unthank, a third year student from the Deakin University (Warrnambool Campus) spent 10 weeks





PhD students Brendan Ebner and Kim Jenkins (right) sampling larval fish at Lake Bijiji, one of the Menindee Lakes. Brendan is working on the interactions between fish and zooplankton while Kim is looking at the emergence of invertebrates from reflooded sediments of dry lakes. *Photo: Karen Markwort*



Sue Nichols, the winner of the University of Canberra's Eric Best Memorial Prize for best overall performance in Resource, Environmental and Heritage Science. *Photo: Karen Markwort*

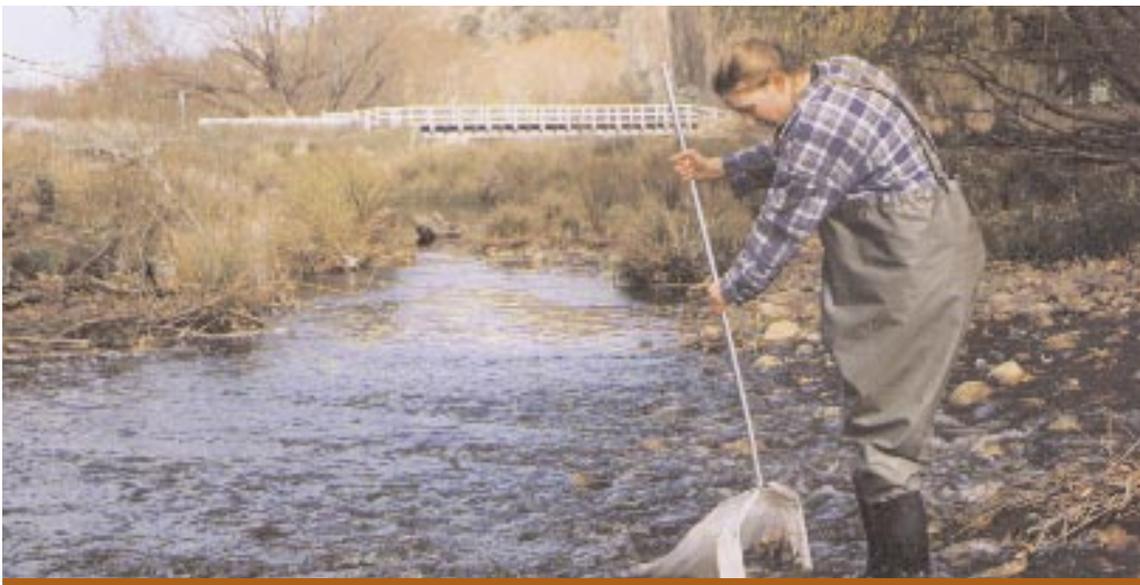
at the Murray-Darling Freshwater Research Centre in the later part of 1997, investigating the colonisation of artificial substrates by ciliates in a billabong. Suzanne's report formed part of her assessment.

- Catchment Management Curriculum at University of Canberra - Recognition of the CRCFE's wide range of expertise led to the establishment of this cross-disciplinary

course for third-year students. Sixteen students undertook this course in 1997 and eighteen in 1998.

Contributing CRCFE lecturers included:

- Peter Cullen, CRCFE - Eutrophication management;
- Rod Oliver, CRCFE -MDFRC - The Darling River bloom;
- Ian Lawrence, CRCFE-ACT Government - Catchment runoff pollutant loads;



Honours student Nerida Davies samples an ACT stream for macroinvertebrates. Nerida's work will feed CRCFE work being conducted to develop biological assessment techniques. *Photo: Phil Sloane*

Terry Hillman, CRCFE-MDFRC -
Billabong/river interactions;
Peter Gehrke, CRCFE-NSW
Fisheries - Fish recruitment; and
John Whittington, CRCFE-MDFRC -
Algal ecology.

Summer research scholarships and work experience

Twelve students participated in the CRCFE's 1997/98 summer scholarship scheme. The scheme provides research experience for promising students who are likely to undertake Honours degrees. It also provides work experience in research laboratories and other organisations with responsibilities for water. This latter area is linked to a professional practise unit at the University of Canberra and supported by several government and private enterprise organisations.

The Lower Basin Laboratory has also taken on work experience students from the Mildura College of TAFE.

5.3 School education

The CRCFE is involved in school education at a number of levels, including:

- presentations at science exhibitions



Russ Shiel explains the important role of microinvertebrates in billabongs to a group of year 11 students attending the CRC-Rotary Easter School. *Photo: Karen Markwort*



Garth Watson helps year 11 students identify macroinvertebrates to solve the science mystery presented to participants in this year's CRC-Rotary Easter School. *Photo: Karen Markwort*

- presentations and field work for specific schools
- curriculum development and teacher training.

Learning outcomes include:

- the excitement of science
- the relevance and importance of science to environmental problems
- an understanding of aquatic ecosystems and the organisms with which we work
- some appreciation of techniques

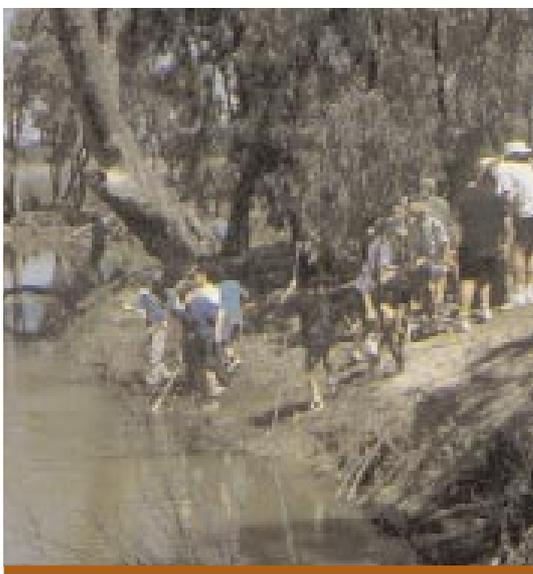
School curriculum materials

Specific funding from a partner, the Murray-Darling Basin Commission, has enabled us to use an experienced secondary science teacher, Mike Copland, to work with teachers and students in programs designed to develop interest and confidence in participating in the freshwater realm. Curriculum materials, including a series of CD-ROMs, titled, *Waterlines: Studies in Australian Irrigation*, are being constantly developed.

CRC - Rotary Easter School on the Murray-Darling Basin

Investigating the whereabouts of a proposed new goldmine in the Border area, was the theme of the third annual CRC-Rotary Easter School on the Murray-Darling Basin (MDB), held in April. Twenty-five year 11 science students were brought in to solve the case. The students were introduced to problem-solving approaches, teamwork, investigative techniques and the use of scientific equipment and resources through the mock investigation. As in the past, both La Trobe and Charles Sturt universities were involved in the school, which was coordinated by Mike Copland and the Albury Rotary Club. It is now clear from the comments and educational choices of past participants, that the Easter School has been a key factor in career pathway choices.

The School prompts considerable interest from the wider community. In addition to extensive media coverage, the school has involved direct participation of groups such as the Wodonga Police, Prime TV, Soulcolor photographic supplies and local community and business people.



The MDFRC Lower Basin Laboratory takes an active role in school education in the Mildura region. Students using macroinvertebrates to assess the health of waterbodies in the area. *Photo: Ben Gawne*

Planning continues for Rotary International involvement in an expansion of the Easter School concept that will enhance the international exchange of student/teacher water quality testing teams.

Demonstrations to school groups

Classroom lessons/demonstrations have been provided at schools requesting assistance. The interest (and understanding) of students from kindergarten up to Year 11 is high, with return visits always indicating a sound retention of knowledge.

More than 25 schools in Albury/Wodonga have been introduced to freshwater environments through billabong and river field trips. The students have ranged from year four to year 11 and the sampling, sorting and observation activities are geared to their interest levels. Post Graduate Diploma of Education students from La Trobe University became involved in this year's program, and assistance is being provided to schools involved in *Murder Under the Microscope*, an interactive World Wide Web educational activity conducted through Sydney University.

The Lower Basin Laboratory has also been very active with a schools outreach program, which has bug collecting and identification field trips for Mildura primary schools, as well as talks and demonstrations.

A highlight of this year's program was the drain stencilling activity involving four schools, which was conducted in cooperation with the other regional natural resource and water authorities. The activity encourages students to think about the impact that stormwater refuse has on river systems.

5.4 Community education

The CRCFE has continued its affiliation with Waterwatch and Streamwatch groups throughout the year.

Other activities

Other community education activities are reported under Chapters 6 and 7, as technology transfer.

Table 5 1
Postgraduate Students

Name	University	Supervisor	Topic	Funding
<i>Honours Commenced</i>				
Kerry BEGGS	University of Canberra	Georges (UC), Doody (UC)	Modelling development time of reptiles in fluctuating temperature regimes	ARC
Julie COYSH	University of Canberra	Norris (CRCFE), Thoms (UC)	Macroinvertebrate recolonisation pathways in a gravel bed river: implications of stream substratum complexity	-
Nerida DAVIES	University of Canberra	Norris (CRCFE), Thoms (UC)	Prediction of local stream habitat features from catchment characteristics	-
Matt O'CONNELL	Charles Sturt University	Robertson (CSU), Baldwin (MDFRC), Mitchell (CSU)	Bioavailability of dissolved organic - carbon (DOC) derived from components of floodplain litter in a river red gum (<i>Eucalyptus camaldulensis</i>)	-
Kylie WALLER	Clayton, Monash	Walsh (Monash) MacNally (Monash)	Differential effects of increasing urbanisation on macroinvertebrates of large woody debris versus benthos	-
<i>Honours Continuing</i>				
Enzo GIARINO	University of Canberra	Georges (UC)	Energetics and home range of the golden tree snake in riparian habitats	CSIRO
Teresa ROSE	University of Canberra	Norris (UC), Thoms (UC)	Effect of flow regulation on downstream physical habitat structures for macroinvertebrates in the Snowy River, Australia	NSW EPA
<i>Honours Completed</i>				
Anthony CONALLIN	La Trobe University	Meathrel (La Trobe) Suter (La Trobe)	Comparison of macroinvertebrate sampling techniques for the rapid bioassessment of lowland rivers	-
Bruno DAVID	Clayton, Monash	Bailey (Monash)	The breakdown of plant material between forest and pasture sites in an upland stream; the importance of riffle and debris dam habitats	-
Michelle HINDLE	Water Studies Centre, Monash	McKelvie (Monash)	Fluorescence monitoring of wastewater by flow injection analysis	-
Colleen MULLEN	La Trobe University	Suter (La Trobe)	Comparisons of biofilm growth on artificial substrata in static and fluctuating water levels in a weir pool in the River Murray	-
Alexandra OLEJNICZAK	La Trobe University	Suter (La Trobe) Lawler (La Trobe)	Taxonomic identification and association of various species of Cheumatopsyche (<i>Trichoptera, Hydropsychidae</i>) using random amplified polymorphic DNA (RAPD) markers	-

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<i>Table 5.1 continued</i>					
Name	University	Supervisor	Topic	Funding	
Claire SELLENS	Clayton, Monash	Bailey (Monash)	A survey of the distribution and breakdown - of organic material in the streambed of sandy reaches of Hughes Creek, a typical southern Australian lowland stream		
Glen SHIELL	La Trobe University	Croome (La Trobe)	Aspects of the physico-chemistry and biology of Dartmouth Reservoir in north eastern Victoria	-	
Phillip SLOANE	University of Canberra	Norris (UC) Maher (UC) Thoms (UC)	Pollution bands for predictive - modelling of water quality		
Glen STAIGER	Water Studies Centre, Monash	Hart (Monash)	Development of gel probes for measurement of phosphorus concentrations in sediments	-	
Marcus STOWAR	University of Canberra	Norris (UC) Humphries (ERISS)	Effects of suspended solids on macroinvertebrate biota downstream of a road crossing		ANCA
Niem TRI	Water Studies Centre, Monash	Beckett (Monash)	Electrical role of particle coatings on phosphorus adsorption using FFF	-	
Janine WEHREN- BRECHT- HOETKER	Water Studies Centre, Monash	Beckett (Monash)	Phosphorus speciation using FFF	-	
<i>Masters Commenced</i>					
Cherie ROBERTS	University of Western Sydney	Gehrke (NSWFRI) Richardson (UWS) Ross (UWS)	Habitat and niche segregation among larval and juvenile fish in Hawkesbury River lagoons	-	
Scott THOMPSON	University of Canberra	Georges (UC)	Systematics of the long-necked turtles in the family Chelidae		ABRS
<i>Masters Continuing</i>					
Mat ALLANSON	University of Canberra	Norris (UC)	Effects of land use on water quality in coastal freshwaters of New South Wales determined using rapid bioassessment		CRCFE
Jason COGLAN	University of Canberra	Thoms (UC) Cho (UC)	The application of GIS analysis of anthropogenic influences upon catchment systems		Hawkesbury Nepean Catchment Management Trust Applied Research Grant
Nicole DAVIS	University of Canberra	Apte (CSIRO) Maher (UC) Wade (ACTEW)	The fate of ammonia and the effects on the river system		ACTEW

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Table 5.1 continued

Name	University	Supervisor	Topic	Funding
David HUNTER	University of Canberra	Osborne (UC) Georges (UC)	Life history of declining and non-declining frogs in the Southern highlands of NSW	-
David JUDGE	University of Canberra	Georges (UC)	Phenotypic variation in reproductive outputs in <i>Emydura macquarii</i>	Nepean Heritage Trust
Brendan OWEN	University of	Harris (NSWFRI) Palaniswami (Melbourne)	Electronic monitoring of fishways	MDBC
Jody SWIREPIK	University of Canberra	Harris (NSWFRI) Williams (UC)	The impact of carp on submerged macrophytes in temperate freshwater	NSW EPA CRCFE
Garry THORNCRAFT	University of NSW	Harris (NSW Fisheries) Erskine (NSW)	Assessment of rock-ramp fishways	NSW Fisheries DLWC Environment Trust
Masters Completed				
David BUCKLEY	University of Canberra	Maher (UC) Lawrence (CRCFE)	A theoretical framework for applying sediment guidelines for managing and protecting aquatic ecosystems	UC
Simon HOLLOWAY	University of Canberra	Osborne (UC) Williams (UC)	The ecology of stream breeding frogs in east Gippsland	DCNR
Mark LINTERMANS	Australian National University	Marples (ANU)	The ecology of the two-spined Blackfish <i>Gadopsis bispinosus</i> (Pisces: Gadopsidae)	-
Ruth O'CONNOR	University of Canberra	Norris (UC)	Analysis options for physical, chemical and biological water quality data in Blue Mountains streams, NSW	AWT ERISS
Robyn PETHEBRIDGE	Macquarie University	Ivanoff (Macquarie) Pollard (NSWFRI)	The ecology of introduced fish in the Hawkesbury Nepean river system	-
PhD Commenced				
Kim JENKINS	University of New England	Boulton (UNE), Brock (UNE)	Flood frequency and community dynamics of invertebrates emerging from reflooded sediments of dry lakes in south-western NSW	Menindee Project Scholarship
Alison KING	Clayton, Monash	Humphries (MDFRC) Lake (Monash)	Identification and quantification of the nursery habitats of Murray-Darling freshwater fish larvae	LWRRDC Scholarship
Alison MITCHELL	Charles Sturt University	Baldwin (MDFRC) Robertson (CSU) Rees (MDFRC)	The effects of hydrological regime on the potential for bacterially mediated phosphorus release from freshwater sediments	CRCFE

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Table 5.1 continued

Name	University	Supervisor	Topic	Funding
Daryl NIELSEN	Charles Sturt University	Hillman (MDFRC) Klomp (CSU) Shiel (MDFRC)	The effect of flooding patterns on invertebrate and vertebrate populations in experimental billabongs	LWRRDC CRCFE MDFRC
Jason SONNEMAN	Water Studies Centre, Monash	Kershaw (Monash) Breen (Melb Water)	The development of rapid bioassessment protocol for the use of diatoms as water quality indicators	APA CRCFE Top Up
<i>PhD Continuing</i>				
Shoeleh ASSEMI	Water Studies Centre, Monash	Beckett (Monash) Hart (Monash)	Characterisation of humic substances and its role in phosphorus speciation in natural waters	Monash CRCFE Top Up
Gillian BEATTIE	Water Studies Centre, Monash	Hart (Monash) Beardall (Monash)	The role of algae and bacteria in nutrient cycling in lowland rivers	Monash CRCFE Top Up
Glen BROWN	University of Canberra	Norris (UC) Maher (UC)	Relationships between nutrients, algae and invertebrates in the Thredbo River	APA Koscuisko Thredbo Top Up
Rhonda BUTCHER	Clayton, Monash	Lake (Monash) Marchant (Museum of Victoria)	Conservation assessment of Victorian wetlands using invertebrates	APA CRCFE Top Up
Stephen BALCOMBE	La Trobe University	Closs (Otago) Humphries (MDFRC)	Spatial and temporal habitat use in billabongs by small fish assemblages	La Trobe Scholarship
Ian DUGGAN	Waikato	Green (Waikato) Shiel (MDFRC) Chapman (Waikato)	The ecology of New Zealand North Island rotifers and their use as bioindicators	-
Jennifer DRIESSEN	Water Studies Centre, Monash	Hart (Monash)	Carbon and nutrient cycling in lowland rivers	CRCFE Scholarship
Patrick DRIVER	University of Canberra	Norris (UC) Harris (NSWFRI) Closs (Otago)	Impact of carp on macrophytes and water quality	CRCFE Scholarship
Sean DOODY	University of Canberra	Georges (UC) Osborne (UC)	Temperature dependent sex determination in freshwater turtles	CRCFE Scholarship
Brendan EBNER	La Trobe University	Gawne (CRCFE) Suter (La Trobe)	Introphic interactions between zooplankton and fish	La Trobe Scholarship
Lisa EVANS	University of Canberra	Williams (UC) Thoms (UC)	Riparian vegetation development and disturbance along the Upper Murray and Murrumbidgee rivers	APA CRCFE Top Up

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Table 5.1 continued

Name	University	Supervisor	Topic	Funding
Kyla FINLAY	Clayton, Monash	Campbell (Monash)	Taxonomy of freshwater invertebrates (<i>Ephemeroptera</i>)	CRCFE Scholarship
Chintha FONSEKA	Water Studies Centre, Monash	Beckett (Monash)	Characterisation of organic matter in wastewaters for optimal recycling and treatment	WSC(I)
Cathy FRANCIS	University of Canberra	Thoms (UC) Gawne (CRCFE) Maher (UC)	The impact of flow regulation on carbon and cycles of floodplain wetlands in nutrient the River Murray	APA CRCFE Top Up
Ian FRASER	Water Studies Centre, Monash	Hart (Monash) Barling (SKM)	Development of a predictive model for algal growth in Cairn Curran Reservoir	Goulburn- Murray Water
Rod FERDINANDS	Water Studies Centre, Monash	Hart (Monash) Finlayson (Melb) Gippel (Melb)	Environmental indicators	Self Funded
Damian GREEN	University of Canberra	Oliver (MDFRC) Harris (CSIRO) Cullen (CRCFE)	Population dynamics and physiology of phytoplankton in an artificially perturbed reservoir	CRCFE Scholarship
Jackie GRIGGS	La Trobe University	Croome (La Trobe) Shiel (MDFRC)	Taxonomy, biogeography and ecology of Chydoridae in Australia	ABRS CRCFE Top Up
Leigh GRAY	University of Canberra	Maher (UC) Lawrence (CRCFE) Ford (CSIRO)	Role of redox processes in the release of phosphorus from sediments	CRCFE Scholarship
Sue GRAHAM	University of Adelaide	Walker (Adelaide)	Impact of water extraction on the endemic invertebrates of artesian springs in the Lake Eyre Region	APA (I) Western Mining
Fiona HOGAN	Water Studies Centre, Monash	Hart (Monash) Baldwin (MDFRC)	Nutrient release from river sediments	CRCFE Scholarship
Matthew INMAN	University of Sydney	Baldwin (MDFRC) Beattie (Sydney) Jones (CSIRO)	Phosphate-ester hydrolysis mediated by mineral phases	ARC
Michael JONES	Water Studies Centre, Monash	Hart (Monash) McKelvie (Monash)	The management of cyanobacterial talings in the aquatic environment	-
Sandra JONES	University of Canberra	Georges (UC) Williams (UC) Osborne (UC)	Conservation biology of the endangered legless lizard <i>Aprasia parapulchella</i> in the Molonglo catchment	ACTEW APRA
Aazam KHOSHMANESH	Water Studies Centre Monash	Hart (Monash) Beckett (Monash)	Study on biotic and abiotic uptake/release of phosphorus by sediment	APA CRCFE Top Up

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Table 5.1 continued

Name	University	Supervisor	Topic	Funding
Natalie LLOYD	Clayton, Monash	Campbell (Monash) MacNally (Monash)	Scales of spatial correlation in macroinvertebrate community structure	CRCFE Scholarship
Dale McNEIL	La Trobe University	Closs (Otago) Hillman (MDFRC) Gehrke (NSWFRI)	Fish, zooplankton and algae dynamics in River Murray billabongs	APA CRCFE Top Up
Stuart MINCHIN	Water Studies Centre, Monash	McKelvie (Monash) Hart (Monash)	Methods for the determination of bioavailable phosphorous using membrane immobilized enzymes	MGS CRCFE Top Up
Deborah NIAS	Clayton, Monash	Bailey (Monash)	Foodweb structure in an ephemeral floodplain wetland	Monash CRCFE Top Up
Louisa OSWALD	University of Canberra	Norris (UC) Maher (UC)	<i>In situ</i> toxicity testing of water quality	APA CRCFE Top Up
Melissa PARSONS	University of Canberra	Norris (UC) Thoms (UC)	Compositional patterns of lotic benthic macroinvertebrates: Relationship to habitat and the scale of measurement	APA CRCFE Top Up
Kylie PETERSON	University of Canberra	Kearney (UC) Thoms (UC) Humphries (MDFRC)	Age, growth and survival of larval fish in the Murray-Darling Basin	APA CRCFE Top Up
Jim PUCKRIDGE	University of Adelaide	Walker (Adelaide)	Flow variability and fish ecology in an arid zone floodplain river, Cooper Creek, Central Australia	-
Sabine SCHREIBER	Clayton, Monash	Lake (Monash) Quinn (Monash)	Ecology of the introduced snail <i>Potamopyrgus</i> <i>antipodarum</i> and its effects on native fauna	CRCFE Scholarship
Kim SHEARMAN	Water Studies Centre, Monash	Hart (Monash) Beckett (Monash)	Investigation of the role of the chelating agent DTPA on the biogeochemical cycling of heavy metals in the River Murray	WSC (I) Scholarship
Soheyl TADJIKI	Water Studies Centre, Monash	Beckett (Monash)	The application of FFF techniques to the study of colloids	Monash Scholarship CRCFE Top Up
Jim THOMSON	Clayton, Monash	Lake (Monash) Downes (Melbourne)	Influences of disturbance on predation in streams	APA
Simon TREADWELL	Clayton, Monash	Lake (Monash) MacNally (Monash) Campbell (Monash)	Role of snags in carbon dynamics in lowland rivers	CRCFE Scholarship

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Table 5.1 continued

Name	University	Supervisor	Topic	Funding
Edward TSYRLIN	Clayton, Monash	Campbell (Monash)	Taxonomy of the Plecoptera	CRCFE Scholarship LWRRDC
Jason VAN BERKEL	Water Studies Centre, Monash	Beckett (Monash)	Colloid characterisation and dynamics in reservoirs	CRCFE Scholarship
<i>PhD Completed</i>				
Shane BROOKS	Clayton, Monash	Lake (Monash)	The role of natural disturbances in lotic systems	Self Funded
David HALLIWELL	Water Studies Centre Monash	McKelvie (Monash) Hart (Monash)	The nature and behaviour of condensed phosphates in wastewaters	APA Industry
Jacqui JORDAN	Clayton, Monash	Lake (Monash)	The role of freshwater crayfish, <i>Cherax destructor</i> , as consumers in billabongs	CRCFE Scholarship
Maureen ROGERS	Charles Sturt University	Hillman (MDFRC) Sinden (UNE) de Lacy (CSU)	The role of the precautionary principle in advancing environmental decision-making under uncertainty: A study of the Barmah- de Lacy (CSU) Millewa forest wetlands	Charles Sturt Scholarship
Michael SHIRLEY	La Trobe University	Closs (Univ Otago) Hillman (MDFRC) Campbell (Monash)	Ecology of European perch (<i>Perca fluviatilis</i>) in billabong habitats	CRCFE Scholarship
Lor-wai TAN	La Trobe University	Suter (La Trobe) Closs (Otago)	Taxonomy, microspatial and temporal variation of testate amoebae (protozoa: rhizopoda) on the submergent macrophyte <i>Vallisneria gigantea</i> in a River Murray floodplain billabong	APA CRCFE Top Up