

COOPERATIVE LINKS

The strength of the Centre comes from joint problem solving, across disciplines and organisations. From its member organisations, the centre can bring people with diverse specialities together to work on joint research projects. The Centre recognises that collaboration is fundamental to achieving its outcomes and has established strong links:

- Across CRCFE sites and disciplines
- With its eighteen member organisations
- With researchers outside the centre
- With natural resource managers, government officials and community groups
- With the water industry
- With the four other water-related Centres in the Water Forum, including the CRC for Catchment Hydrology; the CRC for Water Quality and Treatment; the CRC for Waste Management and Pollution Control; and the CRC for Coastal Zone, Estuary and Waterway Management.

2.1 Internal cooperation

The Centre works hard to ensure that cooperation occurs between its four research programs and across its different sites. Internal structures and activities are in place to facilitate this internal cooperation:

*Dr Terry Hillman receiving the Chairman's Award, presented by Prof Peter Cullen at the annual staff meeting. The award recognises significant contributions to the Centre.
Photo: L Sealie*



Table 2.1
Activities fostering
internal collaboration

Activity	Function	Frequency
Board meetings	Set Centre policy and direction. Ensure that activities meet the Centre's stated objectives	4 times per year
Executive meetings	Review progress of the Centre in terms of outcomes. Provide implementation plans on new initiatives as determined by the Board	Monthly
Program Leader Meetings	Review and coordinate progress of research programs. Act on policies set by the Board.	Quarterly
Program meetings	Coordinate the implementation of each research program, review progress	Annual
Joint Program Leaders Meeting	CRCFE & CRCCH – opportunities for joint activities.	Annual
Project Management	Project manager reviews progress and facilitates feedback to the Program Leaders, Executive Committee and the Board	Regular contact
Staff Meeting	Sharing and updating of information	Annual
Postgraduate Workshop	CRCFE postgraduate students	Annual
Postgraduate Supervisors' Workshop	CRCFE postgraduate supervisors	Annual
Lotus Notes Database	Most CRCFE sites are connected with each other electronically. Lotus Notes , a projects management system, facilitates reporting and collaboration.	Ongoing
Seminar Series	Most CRCFE sites run a seminar series, hosted by the parent organisation in collaboration with the Centre	Variable



Table 2.1
continued

Activity	Function	Frequency
Watershed	Internal and external newsletter, reports on Centre's research. Readership of 3,000	6 times per year
Ripples	Internal newsletter	Fortnightly
Lower Basin Links	For the Lower Basin Laboratory (Mildura) stakeholders & community	3-4 per year

Sharing of facilities

The Centre's research portfolio emphasises cross-project and cross-site links. As a result, a number of projects share field sites and equipment. Staff and students have access to the following facilities across research sites:

- Experimental billabongs – Albury
- Chemistry laboratories – Albury, Canberra, Melbourne, Brisbane, Mildura, Goondiwindi
- Curated flora and fauna collections – Canberra, Albury

2.2 Cooperation with partners

ACT Electricity and Water Corporation

Design of Environmental Flow Monitoring Program: Cotter & Queanbeyan Rivers. Ian Lawrence, Richard Norris, Bill Maher, Martin Thoms, Mark Lintermans & Gerry Quinn undertook the development of a monitoring program for ACTEW. Final Report submitted 13th June.

Risk Assessment of Distributed Treatment Plant Strategy Study. Ian Lawrence, Richard Norris, Bill Maher & Peter Cottingham, in association with Monash Department of Epidemiology & Preventative Medicine, are undertaking a risk assessment of potential impacts of distributed treatment plant scenarios, as part of ACTEW strategy assessment. The study is scheduled for completion in August 2000.

Peter Cullen and Ian Lawrence met with ACTEW to advise on minimising impacts on urban streams from effluent discharge.

CSIRO Land and Water

CRCFE and CSIRO Land and Water have jointly entered into a partnership agreement to carry out a number of tasks relating to the waterway condition facet of the National Land and Water Audit.

Barry Hart and Mike Grace organised a workshop on nitrogen dynamics in collaboration with CSIRO Land and Water.



Stuart Bunn and colleagues from Griffith have worked closely with Dr Ian Prosser and Dr Peter Hairsine on the LWRRDC Riparian Lands Program.

The CSIRO Land and Water staff visited the MDFRC as part of a “Pastoral Visit”.

Terry Hillman attended an Urban and Rural Water Management Program Research Group Leaders meeting in Canberra.

John Whittington participated in a video conference link for Component 1: National Water Reform for the CSIRO Land and Water Sector.

Rhonda Sinclair continues to provide articles for the Land and Water internal newsletter, *InterActions*, reporting on Centre activities.

Ian Lawrence and Gail Ransom worked with CSIRO Land and Water on the Burrinjuck Project.

John Harris, Terry Hillman, Peter Cullen worked with CSIRO Land and Water on a MDBC project “Rivers as Ecological Systems”.

Department of Land and Water Conservation (NSW)

Martin Thoms worked with the DLWC on the Namoi Scoping Study.

Ben Gawne attended a meeting to review Water Quality monitoring in NSW, organised by DLWC.

Ben Gawne met with David Harris (DLWC) and Paul Lloyd (MWWG) to discuss Weir pool manipulation.

Stuart Bunn has been collaborating with Bruce Chessman and Doug Westhorpe on stable isotope analysis of biofilms. This forms part of DLWC’s “Integrated Monitoring of Environmental Flows Methods Manual”.

John Whittington attended a meeting of the Murray Unregulated River Management Committee in Khancoban, where interim flow access rules for the Billabong and Mannus Creeks were determined.

Terry Hillman attended numerous meetings of the Murray Lower Darling Community Reference Committee throughout NSW.

Stuart Bunn ran a workshop on Riparian Zone Management, with Dr Ian Prosser (CRCCH, CSIRO Land and Water), Dr Siwan Lovett (LWRRDC) and Dr Peter Davies (UWA), for DLWC staff in Coffs Harbour. Stuart Bunn provided expert advice on riparian issues.



Ben Gawne and Glenn Wilson collaborated with DLWC to organise a “Bug Day”. 122 students from Mildura West Primary School attended.

Ian Lawrence, Rod Oliver, Gail Ransom (CRCFE) & Myriam Bormans, Brad Sherman, Phillip Ford (CSIRO) facilitated a Workshop for Reservoir Managers on Algal Management in Reservoirs, for DLWC, MDBC, ACTEW, Environment ACT, Goulburn Murray Water, DNR (Qld), Melb Water, DNRE (Vic)

Department of Natural Resources (Qld)

Peter Cullen led the Scientific Panel on the Western Rivers for Queensland Department of Natural Resources. A number of CRC scientists were involved (Stuart Bunn, John Harris, David Moffat and Jim Puckridge). The technical report *Scientific Forum on River Condition and Flow Management of the Moonie, Warrego, Paroo, Bulloo and Nebine River Basins*, edited by Peter Cottingham, provided to Queensland DNR.

Stuart Bunn ran a workshop on Riparian Zone Management, with Dr Ian Prosser (CRCCH, CSIRO Land and Water), Dr Siwan Lovett (LWRRDC) and Dr Peter Davies (UWA), for DNR Queensland staff in Kenilworth, (as well as local councils and EPA staff). Stuart Bunn provided expert advice on riparian issues.

Angela Arthington has served on the Technical Advisory Panels for the Logan, the Burnett and the Pioneer Water WAMPs (Water Allocation Management Plans). Technical reports on Vertebrates and Estuarine and Marine systems have been provided as part of WAMP documents.

Martin Thoms, Stuart Bunn and Angela Arthington continued to provide technical advice to the DNR on Environmental Flows.

At the request of the Queensland Minister Rod Welford, Peter Cullen led a team to review the ecological assessment processes used in the WAMP (Water Allocation Management Plan) developed by Queensland Department of Natural Resources. CRC staff involved included Angela Arthington, Stuart Bunn, John Harris, Terry Hillman, Richard Norris and Gerry Quinn. The technical report *Technical Review of Elements of the WAMP Process of the QDNR*, edited by John Whittington, provided to Queensland DNR.

Stuart Bunn was a member of the Technical Advisory Panel for the Fitzroy Basin Water Allocation and Management Plan:

- review of WAMP and advice to QDNR and the State Minister
- review of IAS on downstream effects of Nathan Dam on the Dawson River.

Angela Arthington provided a personal review of technical aspects of the Fitzroy Basin Water Allocation and Management Plan.



Stuart Bunn attended two meetings with the Program Management Committee of the LWRDC Riparian Lands Program, which includes representatives from QDNR, DLWC and DNRE, and assisted in the development of R&D priorities for Phase 2.

Stuart Bunn has been actively involved in the SouthEast Queensland Regional Water Quality Management Strategy as Deputy Chair of the Scientific Expert Panel. QDNR is one of the partners of this (along with the EPA, BCC and 19 other councils). Angela Arthington deputises for Stuart on the Scientific Expert panel.

Department of Natural Resources and Environment (Vic)

Martin Thoms has been meeting with the DNRE to discuss snags and geomorphology.

Peter Cottingham attended steering committee meetings for a project developing a rapid economic appraisal of algal blooms for DNRE.

Peter Cottingham facilitated CRCFE feedback and contacts to Tom Ryan (DNRE) on proposed study of cold water effects on native fish.

Barry Hart and Peter Cottingham assisted Trish Geraghty in developing an outline of a scoping study to support the development of a rehabilitation plan for the Thomson and Macalister Rivers as part of the Stressed Rivers Program.

Environment ACT

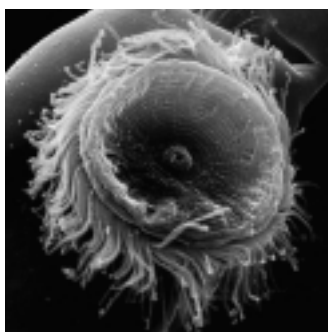
Design of Environmental Flow Monitoring Program: Cotter & Queanbeyan Rivers. Ian Lawrence, Richard Norris, Bill Maher, Martin Thoms, Mark Lintermans & Gerry Quinn undertook the development of a monitoring program for ACTEW. Final Report submitted 13th June.

Integrated Catchment Management Framework for the ACT. Ian Lawrence was a member of the Steering Committee and assisted with drafting the Framework document.

National Water Audit: ACT analysis. Ian Lawrence provided advice and assistance to the Water Section of Environment ACT.

ACT Water Quality & Ecology Monitoring Program. Ian Lawrence, Richard Norris and Bill Maher undertook a review and report on Integrated Water Quality & Ecology Monitoring for Environment ACT. Ian Lawrence provided assistance on the ACT Water Quality 1999/2000 Report (March 2000) and a review of the draft Australian Water Quality Guidelines 'trigger values' for the ACT.

Environmental Flow Guidelines. Ian Lawrence assisted in the drafting of responses to comments on the draft Guidelines.



A microinvertebrate, Trichodina diaptomi, a single-celled ciliophoran (Protista) which lives on the surface of BOECKELLA, a copepod microcrustacean, in upper R. Murray billabongs. Photo: J Green (Univ. of Waikato) & R Shiel (MDFRC)



Advice on catchment management and wastewater licencing. Ian Lawrence provided a briefing on the findings of 'Analysis of factors determining algal levels & composition in Burrinjuck Reservoir' (LWRRDC & MDBC), and advice on methods for setting discharge licences.

Development of ACT related research program. Ian Lawrence undertook a compilation of ACT Water Research related information needs and assisted in development of ACT Water Research proposals for the new CRCFE research portfolio.

Sullivans Creek Catchment Coordination Committee. Ian Lawrence is a member of the Technical Advisory Group, and assisted in the development of the Catchment Management Strategy.

Ian Lawrence provided draft material on the David St & Banksia St Wetlands Pilot Project Proposal.

Ginninderra Catchment Management Group. Ian Lawrence provided advice on the Emu Ridge Wetland proposal.

Review of ACT Cap Submission. John Whittington provided comments on the ACT Cap Submission.

Ian Lawrence advised Environment ACT on Water Audit analysis techniques.

Peter Cullen participated in a seminar organised by the Chief Minister's Department to assist groups developing bids for new CRCs.

Peter Cullen led a one-day planning workshop on environmental priorities for the ACT with the Environment Advisory Committee.

Peter Cullen attended two meetings of the ACT Science & Technology Council.

Peter Cullen chaired meetings of the Environment Advisory Committee.

Peter Cullen attended meetings of the Gungahlin Development Board.

Peter Cullen chaired the ACT Assessment panel for NHT and Environment Grants.

Environment Protection Authority (NSW)

Glenn Wilson discussed findings on carp control through drawdowns with NSW EPA staff (Justin Simpson), Mildura.



Warning!
Photo: P Sloane

Ian Lawrence undertook a review of an EPA Report 'Comparison of Selected Models to estimate nutrient loadings' for the EPA.

Environment Protection Authority (Vic)

Peter Cullen participated in the Gippsland Environment Forum conducted by the EPA.

Barry Hart convened a workshop to explore the best available approach to determining the phosphorus load exported from the Macalister Irrigation District as part of local nutrient reduction strategies. Peter Cottingham and Ian Lawrence also attended the workshop.

The Victorian Minister for Environment and Conservation, Sherryl Garbutt, has invited Professor Hart to serve as a member of the Environment Protection Board for a three-year term.

Peter Cottingham joined the council of Envirolinx, convened by the EPA.

Goulburn-Murray Rural Water Authority

Barry Hart, Ian Lawrence and Mike Grace were invited participants in a technical review of the Lake Mokoan Cyanobacterial Blooms program.

Mike Grace, Peter Breen and Barry Hart met with Pat Feehan from Goulburn-Murray Water to discuss the development of a research proposal for the National Program for Irrigation Research and Development.

Peter Breen attended the Engineering Excellence Awards with Goulburn-Murray Water where the Muckatah ecologically sensitive drainage design won an award.

Ian Lawrence and Rod Oliver facilitated the Reservoir Management Workshop organised by Goulburn-Murray Water.

Pat Feehan from GMW attended the centre's organised workshops on nitrogen dynamics, and phosphorus export from the Macalister Irrigation District.

Griffith University

The Centre funded Angela Arthington's work on the distributions of freshwater fish in Queensland, through the Endemism Scoping Project.

Work on the Centre's Associated Project DIBM3/RR3 funded by SEQRWQMS, and discussions with Richard Norris re Project D2, have helped shape the research project of CRCFE PhD student Mark Kennard.



Dr P Newall sampling a Victorian stream for macroinvertebrates. Dr Newall is a CRCFE scientist from the EPA, Victoria. Photo: EPA, Victoria



Several Centre members worked with Angela Arthington on the Review of the Ecological Benefits of State Responses to COAG, and on the Environmental Flows Advisory Panel and the Water Quality Think Tank (Environment Australia).

Dr James Udy attended the workshop on nitrogen dynamics organised by Barry Hart and Mike Grace.

Di Flett and David Rischbieth briefed Centre staff about Lotus Notes and accounting procedures.

Richard Norris has assisted in the development of the Griffith University Associated Project DIBM3/RR3, funded by the SEQRWQMS.

La Trobe University

Terry Hillman has been awarded the degree of Doctor of Science (honoris causa).

Terry Hillman attended numerous Board meetings during the year.

Terry Hillman presented a lecture on “Billabongs in the Murray Darling Basin” for the Graduate Diploma in Environmental Management students.

Lower Murray Water

Iain Ellis provided information to Lower Murray Water on local native fish and goldfish found in sewage treatment release ponds.

Ben Gawne met with CEO of Lower Murray Darling CMC regarding Thegoa Lagoon.

Melbourne Water

Peter Cottingham and John Koehn participated in Melbourne Water ISO 14000 training module on managing snags in waterways. John Whittinton, Peter Cottingham and Lynne Sealie drafted a brochure on the ‘Ecological importance of snags’ to support this session.

Tony Wong (CRCCH), Scott Seymour (Melbourne Water) and Peter Breen conducted a Constructed Wetland Tour in Melbourne. Tour attendees included rural and urban local government, catchment management authorities, drainage management authorities and commercial consultants.

Peter Cottingham prepared briefing material to staff at Melbourne Water on:

- The decline of amphibians in Australia.
- The ecology of avian botulism outbreaks.
- The impacts of highway runoff on waterways.
- Heavy metals in waterways.

Peter Cottingham facilitated arrangements for Scott Seymour (Melbourne Water) to give a seminar on management perspective of stream frontage management.



Mulga parrot, Psephotus varius.
Photo: A Tatnell



Peter Cottingham identified potential position papers of use to Melbourne Water.

Daryl Nielsen and Peter Cottingham supplied information on approaches to sampling zooplankton in the Patterson Lakes.

Peter Cottingham, Rod Oliver and John Whittington supplied opinions on the potential effects of using iron sulphate for the control of algae in reservoirs. Advice from the CRC for Water Quality and Waste Treatment and the WA Water and Rivers Commission was also sought.

Peter Cottingham assisted Graham Rooney with the formation of the Yarra Forum, which will provide opportunities to promote cooperation between researchers and managers undertaking work in the Yarra catchment.

Chris Walsh and Peter Breen briefed senior Melbourne Water Staff on urban stream research priorities, 6 August 1999.

Monash University

Peter Breen attended a project development meeting called by Prof Peter Kershaw, Palaeoenvironmental Change - with respect to contemporary management issues. Yarra River billabongs will be a major study site for this project.

Peter Breen participated in the presentation of a Stormwater Management short-course (with Assoc. Prof. Tony Wong, CRCCH).

Murray Darling Basin Commission

Terry Hillman attended numerous Riverine Issues Working Group meetings.

The Centre was invited to develop a framework for the Sustainable Rivers Audit (SRA) for the Murray-Darling Basin's waterways, proposed by the Murray-Darling Basin Ministerial Council. The Centre, in close consultation with water industry representatives, utilised its experience in water quality and ecological assessment to develop the SRA framework.



The Centre was contracted to produce a report “Ecological Sustainability of rivers of the Murray-Darling Basin” as an input to the “Review of the Operation of the Cap” undertaken by the Murray-Darling Basin Ministerial Council. Recommendations made in the Centre’s report were adopted in the Ministerial Council’s Review of the Operation of the Cap and are now being implemented.

The CRCFE and CRCCH are undertaking the scoping stage of a large river rehabilitation project funded through the Riverine program. Peter Cottingham and Sabine Schreiber provide CRCFE contributions, supported by advice from Gerry Quinn, Sam Lake and Terry Hillman.

Peter Cullen, Peter Cottingham and John Whittington commented on the MDBC Communication Strategy.

Terry Hillman, Rod Oliver, John Whittington, Mike Copland and Peter Cottingham attended the MDBC 1999 Strategic Investigations and Education Forum (Irrigation, Dryland and Riverine Sub-Programs Forum) in August, where both Rod and Peter presented papers. Peter’s presentation of the ‘MDBC Riverine Management Scoping Study’ was awarded best paper in the Riverine sub-program.

Peter Cullen attended a Workshop on Dryland Salinity and Biodiversity jointly sponsored by Environment Australia and the MDBC. This led to a scoping study on the impacts of salinity on selected biota being done at the MDFRC by Terry Hillman and Daryl Neilsen.

Rod Oliver attended a meeting of authors for the MDBC Darling River book.

Lynne Sealie attended a workshop and commented on the MDBC Initiative documents.

Peter Cottingham assisted Lance Lloyd from the MDBC in evaluating project proposals for nutrient management as part of the MD2001 program.

Sunraysia Rural Water Authority

David Seamer and Iain Ellis provided information to Sunraysia Water on freshwater snails and algae.

Ben Gawne met with the CEO of Sunraysia Rural Water Authority to discuss the research program of the Lower Basin Laboratory.

Sydney Catchment Authority

Peter Cullen assisted SCA with selection of a Chief Scientist (March). He also took part in further discussions about Indicators of Catchment Health, relating to the inner catchment areas.

Peter Cottingham is assisting Tony Paull at the SCA in developing a monitoring and assessment program for future environmental flows from the Woronora River, supported with



advice from Gerry Quinn, Terry Hillman, Richard Norris, John Harris, Martin Thoms, Phil Sloane and Judy Frankenberg.

Scientists researching Wingecarribee Swamp, combined with ecologists from the Centre, met to develop a knowledge strategy for the swamp. A report on the “Management of Wingecarribee Swamp and Reservoir: Identification of Knowledge Gaps” was prepared for Sydney Catchment Authority.

Peter Cullen met with Sydney Water to develop an Environmental Impact Statement on Environmental Flows in the Sydney Region, for the Sydney Catchment Authority. It was not clear that the EIS was the best route to follow and the SCA has decided not to proceed down this path.

The Centre held a workshop for Sydney Catchment Authority on Indicators for Catchment Audits. Peter Cottingham and Peter Cullen prepared a report of the workshop. Peter Cottingham and Barry Hart provided advice on catchment indicators to be included in the SCA operating licence.

University of Canberra

Peter Cullen spoke at the University of Canberra Division of Science & Design Strategic Planning Workshop. “Reading the tea leaves - options, futures & threats.” The White Paper on University Research.

Peter Cullen spoke to the Heads of Schools for the Vice Chancellor on “Developing a Research Culture”. Peter Cullen presented a talk to Council of University of Canberra on the “Trends in Industry University Collaboration”.

Peter Cullen spoke to a UC Seminar on “The CRC as a Knowledge Organisation”.

Peter Cullen spoke to the UC Research Leaders Group outlining the green paper and the developing frameworks for industry-university collaborations.

Peter Cullen presented a talk to Council of University of Canberra on the “Trends in Industry University Collaboration”.

Peter Cullen spoke on the Knowledge Business to a group of Venture capitalists visiting the ACT.



2.3 External cooperation

The Centre actively collaborates with more than 70 external organisations, including research funding bodies, universities, industry organisations, government departments, agencies and community organisations. These collaborations facilitate the exchange of ideas and ensure that staff and students are contributing to and participating in the science and water industries.

Universities, government departments, agencies and funding bodies include

Charles Sturt University, Bureau of Rural Sciences, Environment Australia, LWRDC, NSW Department of Agriculture, Queensland EPA, Office of the ACT Commissioner for State of the Environment, Olympic Coordinating Authority, University of Adelaide, University of Western Australia, Northern Territory University, Water and Rivers Commission, WA and City of Newcastle, NSW, Department of Planning SA.

Professional organisations/societies include

Academy of Technological Sciences, Australian Academy of Science, Australian Biological Resources Study, Australian Science Communicators (ASC), Australian Society for Limnology (ASL), Australian Water Association, Ecological Society of Australia, Federation of Australian Science and Technological Associations (FASTS), Australian Society for Fish Biology, the Royal Australian Chemical Institute, Water Research Foundation.

Community organisations include

Albury Rotary Club, Anabranch Water Trust, Lake Eyre Catchment Coordinating Group, Landcare, Lower Murray-Darling Catchment Management Committee, Mallee Catchment Authority, Murray-Darling Association, Murray-Darling Basin Community Advisory Committee, National Parks Association, North East Catchment Management Authority, Probus Clubs, Salt Action Groups, Streamwatch, The Australian Conservation Foundation, Total Catchment Management Groups; other Rotary and Apex Clubs, Angling Clubs, Renmark Irrigation Trust, University of the Third Age, Water Watch.

Bureau of Rural Sciences

Peter Cullen was invited to present a seminar to Bureau staff following meetings with the Director, Peter O'Brien, and our wish to develop closer collaboration between the Bureau and the Centre.

Environment Australia

Peter Cullen met with staff from the Water Quality section of Environment Australia to discuss the future of the National Water Quality Monitoring Program.

Peter Cullen chaired a meeting of the National River Health Program Advisory Committee considering research grants and provided advice on these proposals to Minister Hill.

The report, *The Likely Ecological Outcomes of the COAG Water Reforms*, has been completed and submitted to the Department.



CRCFE and CSIRO Land and Water have jointly entered into a partnership agreement with the National Land and Water Audit to carry out a number of tasks relating to the waterway condition facet of the Audit.

Peter Cullen serves on the State of Environment Advisory Committee and attended meetings to brief the consultant on the water chapter.

Peter Cullen attended a meeting of the Steering Committee of Waterways and Estuaries Project as part of the Land and Water Resources Audit. John Harris chaired the Committee.

Chris Walsh, Peter Breen and Mike Grace made presentations to the Urban River Health Workshop at Monash University Clayton on 8 Dec 1999, convened by Environment Australia, resulting in the Draft Urban River Health Strategic Framework.

Gippsland Water

Peter Cullen chaired the Technical Review Committee for Gippsland Water.

Olympic Coordinating Authority

Peter Cullen was asked to assist with a problem about weed growth in the Olympic Rowing Course at Penrith. He inspected the site to develop some approaches, then assisted with a workshop to develop a management strategy.

Wimmera-Mallee Rural Water

Peter Cullen met with WMRW to discuss its association with the centre and delivered a seminar on 'Balancing Economic & Environmental Demands for Water. The Balancing Act – Futures for Water Reform'.

2.4 Cooperation with other CRCs

The Centre looks for opportunities for collaborative projects and activities with other CRCs. It is an active member of the CRC Program community and many Centre staff members liaise with their counterparts in other CRCs. The Executive Officer, Business Manager and Communications Manager, for example, are part of an active network of information sharing with other CRCs on relevant areas of operation.

The CRC Association

Four staff members attended and participated in the CRC Association's Annual Conference in May.

The CRC Water Forum

The Water Forum is comprised of the CRCFE, the CRC for Water Quality and Treatment, the CRC for Catchment Hydrology, the CRC for Waste Management and Pollution Control, and the CRC for Coastal Zone, Estuary and Waterway Management. The Forum meets quarterly to identify and implement joint programs and promotional activities. The



CRCFE coordinated the production of a Water Forum brochure and display, to be used for joint communication activities, such as the Third International River Management Symposium.

CRC Water Quality & Treatment

Peter Cullen presented a talk to CRC for Water Quality & Treatment on 'Catchment Issues'.

The CRC for Freshwater Ecology's Rod Oliver is collaborating with the CRC for Water Quality and Treatment on the project "Artificial Mixing for Destratification and Control of Cyanobacterial Growth in Reservoirs". CSIRO Land and Water is also collaborating in this project.

The CRC for Catchment Hydrology

The CRCFE works collaboratively with the CRCCH on joint research conducted within the Centre's Urban Water Management program, the Granite Creeks restoration project, the Campaspe environmental flows project and the Characterisation of Flow project.

Stuart Bunn has led the ecological component of the LWRRDC research program on riparian lands, in collaboration with CRCCH, and is negotiating on behalf of the centre for involvement in Phase 2 of the Program.

Dr John Langford is the independent chair for both the CRCFE and CRCCH.

*The Chief Executive Officers of the
Water Forum CRCs.
(l to r) D Bursill (CRC WQ & T),
P Cullen (CRCFE), R Mein (CRCCH),
D Garman (CRCWM & PC) and
R Shaw (CRC Coastal)*



2.5 International Collaborations One way the Centre ensures its research is world-class is through international collaborations with selected institutions and researchers. These linkages enrich the research generated by both parties, and inform the broader Australian water science community in Australia as CRC researchers share their knowledge.

Table 2.2 International Research Collaborations

CRCFE member	Activity	Links
Prof Angela Arthington	Involved in planning the International Conference on Best Practice Environmental Flows	To be held in Cape Town, South Africa, 2002
Prof. Stuart Bunn	River restoration techniques and workshops	Newbury Hydraulics, British Columbia.
Prof. Stuart Bunn	Collaborative research projects on riparian lands	National Institute of Water Atmospheric Research, New Zealand
Dr Ron Beckett, Dr Ian McKelvie	Continuing collaborative research	Chiang Mai University, Thailand
Prof Barry Hart	Continuing collaboration	Institute of Technology Bandung, Jember Univeristy, Indonesia
Prof Barry Hart, Assoc. Prof Richard Norris	“	University of Brawijaya, Malang
Prof Barry Hart, Assoc. Prof Martin Thoms	“	University of Capetown
Prof. Sam Lake	Collaborating in a project on the ecological condition and monitoring of Mediterranean rivers of Spain	Universidad de Vigo, Universidad de les Iles Balleares, Universities of Granada, Almeria, Murcia, Barcelona. All in Spain
Assoc Prof Richard Norris	Collaborating with Prof Allan on a large Waters and Waterways project	University of Michigan
	Met with the US Environmental Monitoring and Assessment Group about study design for nationwide reporting	USEPA
Dr Russ Shiel	Collaborating with Dr John Langford and Assoc Prof John Green on Murray River billabong project	University of Waikato



Table 2.3
International Visitors

CRCFE site	Activity	Links
University of Canberra	Linda Thrift met with Peter Cullen	UK Office of Science & Technology
University of Canberra	Professor Jiri Marsalek met with Ian Lawrence & Peter Breen to discuss urban water research collaboration	National Water Research Institute, Burlington, Ontario, Canada
Griffith University	Hosted Professor Robert Naiman's attendance at the Riversymposium and discussed riparian research issues	University of Washington, USA
Griffith University	Stuart Bunn met with a delegation of water scientists and managers from Japan	River Ecology Research Group of Japan
Griffith University	International review of the LWRRDC riparian lands program (Phase 1)	Dr Rob Davies-Colley (NIWA) and Dr Jack Imhof (Ontario Ministry for Natural Resources, Canada)
Lower Basin Laboratory	Prof Digby Cyrus met with Ben Gawne Glen Wilson and Iain Ellis	University of Zululand and Board Member of Mhlathuze, South Africa
MDFRC	Mike Copland gave an overview of MDFRC activities	Japanese environmental scientists.
MDFRC	Mike Copland gave an overview of MDFRC activities to a study group of amateur and professional botanists	Canadian Botany Group
MDFRC	Visit to the Centre by delegation of officials organised by Mr Ron Dennis	China Department of Agriculture
MDFRC	Meeting for its international and Australian freshwater conservation staff to meet and explore Australian approaches to freshwater conservation	Delegates of the World Wide Fund International Freshwater Advisory Group River and Catchment Conservation Forum
Monash University	Delegation of Thai academics held discussions with Prof Barry Hart and Dr Ron Beckett about the CRC model and its relevance for Thailand	Burupha University, Chang Mai University, Ramkamhaeng , University, Ubon Ratchathani University, Suranaree University of Technology

