

Proceedings of the Lake Eyre Basin

MINISTERIAL FORUM



**BIENNIAL
CONFERENCE**
BIRDSVILLE, QLD
25–26 OCTOBER 2002



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Speakers, Presenters and Panel Members: Vanessa Bailey, Peter Bell, Don Blesing, Andrew Boulton, Lynn Brake, David Brook, Stuart Bunn, Greg Campbell, Mike Chuk, Peter Cullen, John Desatge, Angus Emmott, Michael Good and the ARIDFLO team, Luise Hercus, Richard Kingsford, Geoff Lawrence, Steve Morton, Sharon Oldfield, Charlie Phillott, Julian Reid, Joc Schmiechen, Geoff Syme, Phillip Toyne, Ross Wilson and Bob Young.

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Introduction

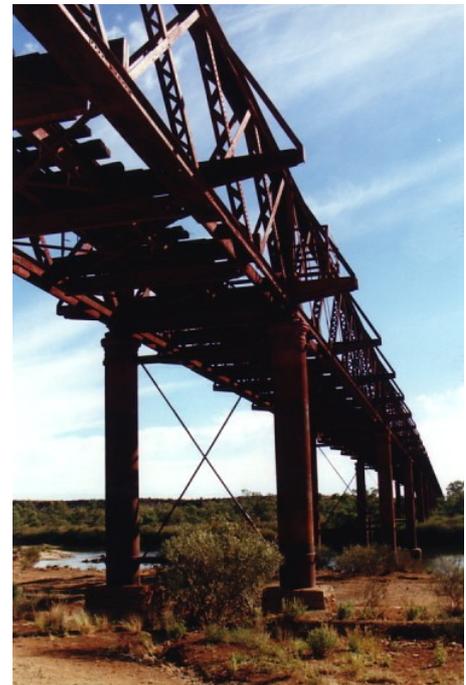
The inaugural Lake Eyre Basin Ministerial Forum Biennial Conference was held in Birdsville on 25-26 October 2002. The Conference was held in conjunction with meetings of the Lake Eyre Basin Ministerial Forum, the Cooper Creek and Georgina-Diamantina Catchment Committees, the Lake Eyre Basin Community Advisory Committee and the Lake Eyre Basin Scientific Advisory Panel. A workshop on the ARIDFLO project was also held following the Conference.

The aim of the Conference was to provide the opportunity for members of the Lake Eyre Basin community, scientists, government officials and other parties with an interest in the sustainable management of the Basin to exchange information and views relevant to the implementation of the Lake Eyre Basin Intergovernmental Agreement.

The Lake Eyre Basin Intergovernmental Agreement is primarily concerned with the sustainable management of water and related natural resources within the major cross-border river systems of the Basin. The Conference was divided into three themes, each relating to a different aspect of managing the Lake Eyre Basin:

- Water for Wildlife and Nature Conservation
- Water for Society and Culture
- Water for making a Living

These proceedings contain a brief summary of the content and outcomes of the Conference, Workshops and Ministerial Forum Meeting that were held over the two days.





2002 Year of the Outback

**2002 Year of the Outback
Founder and Chairman, Mr Bruce Campbell MBE
Message of Support
to the**

Lake Eyre Basin Ministerial Forum Biennial Conference – Birdsville: 25-26 Oct

I count it as a privilege to have the opportunity of sending a message of support to the coordinators and attendees of the Lake Eyre Basin Ministerial Forum Biennial Conference being held during this, Australia's Year of the Outback.

The Year of the Outback is surging ahead at an electrifying pace and it is events such as this important Conference that are playing such a vital role in its success.

With support from individuals and groups such as each of you here today the Year is uniting Australians to focus undivided attention on our regions, their immense diversity and their vital role in our future.

I am both pleased and proud to report that to date more than 3000 events and activities are being identified with the Year of the Outback. Their diversity, geographic spread, the community spirit behind them and the number of volunteers involved tell their own story of the outpouring of the true Australian spirit.

The processes released by the Year of the Outback will be ongoing ensuring that its ultimate objective – to leave an enduring legacy of benefits – is fulfilled.

Events such as your Conference, focusing on issues so vital to our great Nation, clearly assist in this endeavour and I thank you again for your invaluable contribution to the "Year" and wish you every success.

**BRUCE CAMPBELL MBE
FOUNDER AND CHAIRMAN
2002 AUSTRALIA'S YEAR OF THE OUTBACK**



**Lake Eyre Basin Ministerial Forum
Biennial Conference**

Birdsville, 25 – 26 October 2002

CONFERENCE PROGRAM

Friday 25 October

- 8:30 REGISTRATION
- 9:00 WELCOME
- Official Welcome
David Brook, Mayor, Diamantina Shire Council
Don Blesing, Chair, Lake Eyre Basin
Coordinating Group
- 9.15 KEYNOTE ADDRESS
*People and catchment management:
Some challenges for the Lake Eyre Basin*
Dr Geoff Syme, CSIRO Land and Water
- | | |
|--|--|
| <p>9.40 THEME 1: WATER FOR SOCIETY AND CULTURE
Overview presentation
Dr Peter Bell</p> | <p>9.45 – 11.45
LAKE EYRE BASIN MINISTERIAL FORUM MEETING</p> |
|--|--|
- 10.00 Panel Discussion
Prof Geoff Lawrence
Mr John DeSatge
Dr Luise Hercus
Dr Geoff Syme
Mr Joc Schmiechen
- 10.20 Discussion Groups
- 10.50 **MORNING TEA**
- 11.20 Group Reports and Questions
- 12.00 Community Forum with Ministers from Lake Eyre Basin Ministerial Forum
- 1.00 **LUNCH & POSTER VIEWING**
- 2.00 **THEME 2: WATER FOR WILDLIFE AND NATURE CONSERVATION**
Overview presentation – **Prof Stuart Bunn**

- 2.20 Panel Discussion
Assoc. Prof Andrew Boulton
Dr Steve Morton
Dr Julian Reid
Ms Vanessa Bailey
Dr Richard Kingsford
Mr Angus Emmott
- 2.40 Discussion Groups
- 3.10 Group Reports and Questions
- 3.40 **AFTERNOON TEA**
- 4.10 Presentation on the WISE project by
Dr Richard Kingsford
- 4.30 Poster Session
- 5.00 Close of Day One
- 7.00 Conference Dinner – Informal BBQ

Saturday 26 October

- 9.30 **THEME 3: WATER FOR MAKING A LIVING**
Overview presentation - **Mr Greg Campbell**
- 9.50 Panel Discussion
Mr Mike Chuk
Mr Bob Young
Mr Angus Emmott
Ms Sharon Oldfield
Mr Ross Wilson
Mr Charlie Phillott
- 10.10 Discussion Groups
- 10.40 **MORNING TEA & POSTER VIEWING**
- 11.00 Group Reports and Questions
- 11.30 Synthesis of Presentations/Discussion
Prof Peter Cullen
- 12.30 **LUNCH**
- 1.30 **WORKSHOP ON ARIDFLO PROJECT OUTCOMES**
Mr Michael Good
Environmental flow requirements for
Australian Arid Zone Rivers
- 4.00 **WORKSHOP CLOSE**
Mr Scott Parker
Lake Eyre Basin Ministerial Forum Secretariat

AFTERNOON TEA

SPEAKER AND PANEL MEMBER PROFILES

Keynote Speaker

Dr Geoff Syme

CSIRO Land and Water

Dr. Geoff Syme is a Senior Principal Research Scientist at the CSIRO Division of Water Resources and Research Director of the Water Security and Sustainable Communities Program in CSIRO Land and Water. He is also Adjunct Professor of Psychology at Curtin University of Technology and Co-Director of the CSIRO/Curtin Research Centre for Applied Psychology. Geoff has been involved with the theoretical and applied aspects of social research in water resources management in both urban and rural areas for twenty-five years.

He is recognised nationally and internationally as being at the forefront in the planning, design and evaluation of methodologies for public involvement programs, public attitudinal surveys, institutional analyses and community change facilitation in environmental planning decisions and developments.

Theme 1 – Water for Society and Culture

Dr Peter Bell

Historical Research Pty. Ltd.

Dr Peter Bell is a director of the consulting firm Historical Research Pty Ltd, based in Adelaide. He is a historian with a long-term interest in the ways European settlement in nineteenth century Australia was shaped by the land, distance, climate and industry. His publications include *Timber and Iron*, describing the evolution of domestic architecture on Queensland mining fields (1984), *If Anything Too Safe*, a study of a coal mine disaster in a small rural town (1996), *AIMS: the first twenty-five years*, a history of the Australian Institute of Marine Science (1998) and the heritage advisory manual *Early Bricks and Brickwork in South Australia*. From 1983 to 1994 he was on the staff of Heritage South Australia, and since then has travelled throughout Australia on heritage consulting business. In the past three years he has taken part in surveys of European cultural heritage places along the Oodnadatta, Birdsville and Strzelecki tracks, commissioned by Heritage South Australia.

Theme 1 Panel

Mr John Desatge

Lake Eyre Basin Coordinating Group

John De Satge was born in Cloncurry Qld. He is a member of the Waluwarra people whose lands are south of Mt Isa Qld, based around the townships of Urandangi and Dajarra. He and other members of his family spent their early years on various pastoral leases in the Channel Country. His family was one of many Indigenous people who lived and worked in the pastoral industry in Northern Australia. John went to school in towns such as Bedourie, Dajarra, Cloncurry and Mt Isa before finishing his senior year as a boarder at Ipswich Grammar School in Brisbane.

John currently works for the Lake Eyre Basin Coordination Group as the Indigenous Land Management Facilitator. He has a long history of working for the communities on the Georgina River. He has worked for community based groups such as Community Aid Abroad, and various state and Federal government departments in Brisbane and Canberra such as the Australian National Parks and Wildlife Service, Primary Industries and Families.

He has served on boards such as ATSIC Regional Council, Regional Electricity Council, Indigenous Vocational Education & Training board and the Freshwater Ministerial Advisory Committee.

Dr Luise Hercus

Australian National University

Luise Hercus is Visiting Fellow in the School of Language Studies at the Australian National University. She has worked on Aboriginal languages and traditions in the Lake Eyre Basin for nearly 40 years.

Prof Geoff Lawrence

University of Queensland

Geoffrey Lawrence is Professor of Sociology and Head, School of Social Science at The University of Queensland in Brisbane. Prior to his appointment he was Foundation Professor of Sociology and Executive Director of the Institute for Sustainable Regional Development at Central Queensland University, Rockhampton. He has worked in the area of rural and environmental sociology for some 30 years. Among his recent books are: *Environment, Society and Natural Resource Management* (2001), *A Future for Regional Australia* (2001) and *Globalisation, Localisation and Sustainable Livelihoods* (2002).

Mr Joc Schmiechen

Lake Eyre Basin Coordinating Group

Joc Schmiechen is the Lake Eyre Basin Coordinating Group's Heritage Tourism Coordinator. He has been consulting widely with the people of the Basin and those outside to develop a strategic framework for future management and sustainable development of heritage tourism within this vast region covering one sixth of the continent. He has worked extensively with tourism operators, industry and government agencies in the Aboriginal and Special Interest Tourism sector initially in South Australia and the Northern Territory. More recently as Travel Program Manager for specialist inbound operator, Diverse Travel Australia, he was involved with the development, packaging and marketing of a range of Australia wide specialist nature-based and cultural experiences for the international market. Over the years he has had a particular focus with small operators and businesses working in regional and remote locations as well as an ongoing concern with tourism impacts and developing sound sustainable practices in how we use our natural and cultural assets.

Theme 2 – Water for Wildlife and Nature Conservation

Prof Stuart Bunn

Griffith University

Professor Bunn is the Director of the Centre for Catchment and In-Stream Research and a member of the Faculty of Environmental Sciences at Griffith University in Brisbane. His major research interests are in the ecology of river and wetland systems with a particular focus on aspects of ecosystem function, and he has published widely on this topic. He is a Program Leader (Restoration Ecology) within the Cooperative Research Centre for Freshwater Ecology and leads one of the CRC's core research projects, on dryland rivers.

Stuart has recently served as a Director of the Board of Land and Water Australia, and as a member of the Scientific Committee for Water Research for the International Council of Science. He is currently Deputy Chair of the Scientific Expert Panel for the SEQ Healthy Waterways Partnership, a member of the Lake Eyre Basin Scientific Advisory Panel, and has previously served on several other State Government advisory committees on water related issues.

Theme 2 Panel

Ms Vanessa Bailey

Queensland Environmental Protection Agency

Vanessa Bailey has a Bachelor of Science Degree and Post Graduate Diploma in Agricultural Science. Vanessa's currently works in environmental planning with the Environmental Protection Agency in Longreach and has been the Qld Project Leader for ARIDFLO, the Environmental Flow Requirements for Australian Arid Zone Rivers Project, for the past three years. She has been an active member of the Cooper Creek Catchment Committee since its formation. She has previously worked at the Department of Natural Resources where she was involved in a project about government and community working together to monitor the health of their local river systems in the Lake Eyre Basin. She has received Department of Natural Resources and Mines Awards for her work on 'collaborative environmental monitoring' in the Lake Eyre Basin. One of these awards was a State Achievement Award for Leadership for her contribution to surveying western Queensland's rivers and streams.

Assoc. Prof. Andrew Boulton

University of New England

Assoc. Prof. Andrew Boulton lectures in aquatic ecology and water resource management in the Department of Ecosystem Management at the University of New England, Armidale, NSW. Previously, he lectured at the University of Adelaide and did three years of post-doctoral research on springs and streams in the Flinders Ranges as well as a year working on desert streams in Arizona. His research interests include the ecology of arid zone rivers and intermittent streams, and he has published some 70 scientific papers on these and other topics in river ecology. He also co-authored a textbook (Australian Freshwater Ecology) used in aquatic ecology courses across Australia, and this includes specific sections on dryland rivers and temporary waters. He is currently a member of the independent scientific review panel of the ARIDFLO program, with specialist expertise in aquatic macroinvertebrate ecology.

Mr Angus Emmott

Lake Eyre Basin Coordinating Group

Angus Emmott is a beef cattle grazer, who, with his wife and two children, lives in the top end of the Queensland channel country. He is a keen natural historian with an interest in natural resource management. Angus has been involved in the Lake Eyre Basin process since it was formed, and is currently deputy chair of the LEB. Coordinating Group, and the Cooper Creek Catchment Committee.

Dr Richard Kingsford

NSW National Parks and Wildlife Service

Dr Richard Kingsford is a Principal Research Scientist with NSW National Parks and Wildlife Service and the independent scientist on the Cooper Creek Catchment Committee. His research over about the last 15 years has focussed on the waterbirds, wetlands and rivers of arid Australia, which cover about 70% of the continent. He has worked on the wetlands of Cooper Creek and the Paroo River, the last free-flowing river in the Murray-Darling Basin. Their wetlands support spectacular waterbird populations, which feed on fish, aquatic plants and invertebrates. Aerial surveys of waterbirds, mapping of wetlands and development of software for delivering our knowledge about catchments are other areas of work for Richard and his colleagues. His research has demonstrated the ecological values of many rivers in arid Australia and impacts of water resource development on rivers. His work on the impacts of water resource development has been done on the Macquarie, Murrumbidgee, Darling and Border Rivers.

Dr Steve Morton

CSIRO Sustainable Ecosystems

Steve is Chief of CSIRO Sustainable Ecosystems, a Division of some 330 staff at eight laboratories across Australia. His scientific skills lie in arid zone ecology, and his work has

focused on methods of integrating conservation into the production matrix. His Division aims to help in achieving pathways towards sustainability for Australia.

Dr Julian Reid

CSIRO Sustainable Ecosystems

Julian is a Community Ecologist and Consultant currently working with CSIRO Sustainable Ecosystems in Canberra. He has more than 20 years experience as an ecologist with State and federal land-management and R&D agencies, private corporations and NGOs. He has undertaken and led many research projects in temperate and arid Australia, and published results in scientific journals, books, government and consultancy reports (> 50), and in popular outlets such as government and nature conservation magazines. He has expertise in Australian ornithology, biological conservation, arid zone vertebrate ecology, and in the design, analysis and application of ecological research to natural resources management and conservation. He has a long research association with Lake Eyre Basin environments, terrestrial and aquatic.

Theme 3 – Water for Making a Living

Greg Campbell

Kidman Holdings Ltd

Greg Campbell is a rangeland ecologist with extensive land management experience in the cattle industry of inland Australia. Greg is General Manager of Kidman Holdings Ltd, one of Australia's largest corporate beef producers.

Theme 3 Panel

Mr Mike Chuk

Qld Department of Natural Resources and Mines

Mike Chuk is a graduate of the Australian National University where he did forestry. For most of the past 25 years he has worked in the LEB in QLD, SA and the NT. He has been involved in land protection, arid zone forestry, national parks and natural resource management. He is currently a councillor in Longreach Shire and the Chair of the Central Western Queensland Remote Area Planning and Development Board.

Ms Sharon Oldfield

Cowarie Station

Sharon Oldfield is a pastoralist from Cowarie Station on the Birdsville Track. She produces organic beef accredited through NASAA. She is a member of the SA Soil Conservation Council, Arid Areas Water Catchment Management Board and Vice Chair of Georgina Diamantina Catchment Committee. She is interested in the ongoing sustainable management of our natural resources while maintaining viable pastoral interests.

Mr Charlie Phillott

Georgina-Diamantina Catchment Committee

Charlie Phillott is a pastoralist and the Chair of the Georgina-Diamantina Catchment Committee and lives on Carisbrooke Station, south west of Winton.

Mr Ross Wilson

BHP Billiton

Ross Wilson is the Environmental Superintendent at BHP Billiton's Cannington Silver Lead and Zinc mine where he manages the environmental department. He spent the first part of his working life as a marine engineer on BHP bulk ore and steel carriers. He has also spent five years as the major shut-down supervisor for Woodside Offshore Petroleum on the North West Shelf Gas Project and was the Senior Environmental Officer at Goonyella Riverside B open cut coal mine, which at the time was the largest open cut coal mine in the southern hemisphere. Ross has a degree in environmental science.

Mr Bob Young

Australian Agricultural Company

Bob Young is currently managing Brighton Downs, on the Diamantina River, for the Australian Agricultural Company. He has worked in the Georgina-Diamantina Catchment for over 24 years, is Vice Chair of the GDCC, and Chairman of the Channel Landcare Group. He is interested in the welfare of the Lake Eyre Basin and sustainable grazing within the Basin.

Synthesis

Prof Peter Cullen

LEB Scientific Advisory Panel

Peter Cullen was awarded the Prime Minister's Prize for Environmentalist of the Year in 2001. Peter is a Director of Land & Water Australia and Landcare Australia Limited. He was founding Chief Executive of the CRC for Freshwater Ecology. He is Chair of the Scientific Advisory Panel for the Lake Eyre Basin Ministerial Forum.



KEYNOTE ADDRESS

People and Catchment Management: Some Challenges for the Lake Eyre Basin

*Dr. Geoff Syme
Water Security and Sustainable Communities
CSIRO Land and Water*

[See Presentation at Appendix A1](#)

The current development of an integrated catchment approach to the management of the Lake Eyre Basin seems to parallel that in other parts of Australia. Heavy reliance is placed on community involvement, stakeholder interaction and an orderly strategic planning process in which priorities for actions are derived. Regional representation within the Basin is strong and at present the government bodies appear to be actively engaged. In this paper I compare what is happening in the Lake Eyre Basin with two NAP regions. One is an advanced one (Corangamite in Victoria) and the other one that is finding its feet (Northern Agricultural WA). It can be seen that by Australian standards things are progressing on track. Some Canadian and US examples also show that the planning and its implementation thus far is advanced in an international sense. Nevertheless, it must be remembered that the catchment management processes are still in their formative stage, government support seems high, the active community have some engagement and progress is highly visible. As things progress there will be a number of challenges, some of which will be almost unique to the Basin because of its small population, large area and the pressures created on the area by a multitude of interests. In this paper I will briefly present five challenges that are likely to become a higher priority for all in the Basin. These are: riding the issue attention cycle; coping with “undermanning” (or too few people for too many hats); engaging the wider community; maintaining community control while maintaining the government’s interest and taking evaluation seriously. The necessity for using government processes as “incentives” rather than “drivers” is canvassed.



THEME 1: Water for Society and Culture

Overview Presentation

Dr Peter Bell
Historical Research Pty Ltd

Many themes in outback history seem identical throughout the country: climate fluctuations between drought and floods, for reasons inexplicable in the nineteenth century; contact between settlers and indigenous people; the constant need to find and manage water; personal hardship as a way of life; the quest for a staple industry which could survive an unpredictable climate, high costs and distant markets. The heritage of these themes is everywhere, and much of it is not very encouraging: homestead ruins, abandoned stockyards and lonely graves.

But far more intriguing than this superficial uniformity of outback experience are the different destinies which transformed different regions. Only a few hundred kilometres apart to the east and west of Lake Eyre, the Oodnadatta track to the left connected South Australia to the Northern Territory, while the Birdsville and Strzelecki tracks to the right linked it to the Channel Country and Queensland. All three tracks obtained their principal water supply by different means. One region was to have an international telegraph system, a railway to the centre, wartime military traffic, a rocket range and harmonious race relations. The other would see German missionary settlements, a tradition of long-distance droving, oil and gas fields and vicious inter-racial warfare. What does this complex heritage tell us about the management of water?



Theme 1: Summary of Panel and Discussion Group Session

The Panel for Theme 1 – Water for Society and Culture consisted of experts in aspects of culture, history and sociology of arid and Indigenous Australia. The Panel members were:

Dr Peter Bell - Historical Research Pty. Ltd.
Mr John Desatge - Lake Eyre Basin Coordinating Group
Dr Luise Hercus - Australian National University
Prof Geoff Lawrence - University of Queensland
Mr Joc Schmiechen - Lake Eyre Basin Coordinating Group
Dr Geoff Syme - CSIRO

The Panel fielded questions from the floor and had a general discussion of the issues raised in the overview presentation. The following points were highlighted:

- The fact that Chinese involvement in the development of the Basin has been left out of the historical literature was pointed out. It was agreed that Chinese market gardens were a significant part of the early Basin landscape.
- It is important that major social values are taken into consideration as part of the decision making process. The mapping of cultural values is important and the challenge is how to consider these values in the context of sustainability.
- Europeans often don't see or understand the significance of many places that are important to Indigenous people such as trade routes, story lines and creation stories. The degradation of these values is a concern to Indigenous people.
- There is a view that money will solve everything. There are many ways to solve the issues and the best way to start is by talking and listening. It is important to recognise that many of the problems will not be solved in the short term, but over a longer period of time.
- Tourists and tourism operators are often not considered to be important stakeholders as they operate from outside of the Basin. Tourism has a huge impact on the Basin and the industry needs better management and regulation.
- Indigenous people are often excluded from the whole process. It takes time for people to develop trust and respect, but Indigenous rights need to be recognised. How do we begin this process?
- The whole community needs to act together to allow all stakeholders to get the best out of the Basin. The Basin has a lot of potential and values will be maintained in the future if everyone is involved in the decision making process.



The delegates were then split into five discussion groups and given a series of questions relating to Theme 1. The following is a summary of the focus group question session:

What do you consider to be the Indigenous and European cultural values of the Lake Eyre Basin?

- European values
 - Exploration
 - Life-sustaining
 - Economic production
 - Recreation
 - Aesthetics
 - Life style
 - Biodiversity
 - Importance of water
 - Family continuity and heritage
- Indigenous values
 - Spirituality
 - Story-lines
 - Sites
 - Trade routes
 - Life sustaining
 - Resources
 - Law
 - Community value
 - Languages
 - Whole of Basin is a rich cultural landscape for Indigenous people
 - Indigenous people have small special places as well as the whole landscape being important
- Values extend right across the basin and come into play where people focus and can be divided into economic, people and landscape.
- High values are concentrated around particular areas or focal points such as:
 - Indigenous sites including fortifications built against other Aboriginal groups around water holes
 - European sites such as those associated with explorers like Bourke and Wills
 - Regional reserves
 - Waterholes that supply towns, tourists and pastoralists
 - Drought refuge sites – animals recolonise waterholes after drought eg. Cooper turtles
- Both pastoralists and Indigenous people see a value in the landscape in terms of culture and production
- Early settlers were reliant on water – routes and tracks follow water
- Values are not always well understood or documented
- The way knowledge is passed on eg. Verbal
- Values are interlinked historically eg. Edible plants and water sources – assisted explorers and settlers
- Perhaps less concern from other groups eg. mining, tourists

Can you think of any historical and current uses of the water resources and river systems of the Lake Eyre Basin?

- Overall, water resources have been fundamental and they remain so.
- Water for recreation, locals and tourists
- Maintaining the natural environment
- Heritage
- Pastoralism

- Mining
- Settlement
- Recreation
- Tourism

What is the importance of the LEB river systems in maintaining social, spiritual and quality of life to the community?

- Deeply important
- Key feature
 - Occasional regeneration kick-starts system and revitalises it
- Increase awareness of the whole big picture
- Number one in maintaining values outlined in question one
- Rivers of the catchment still shape society – focus of human activity

What are the potential threats that may impact on these values?

- Mining
 - Inappropriate exploration techniques
 - Over-use of water resources
 - Water extraction
- Tourism
 - Ignorance by visitors
 - Poor use of sites
 - Introduction of weeds
 - Introduction of disease
 - Over-use of resources (such as water)
 - Pricing differentials of campsites leads to more pressure on cheaper sites
 - Pollution and damage
 - Removal of artefacts
 - Trespass
 - Tourism on Indigenous and ecologically significant sites
 - Precious things attract people who in turn may be 'loving them to death'
- Pastoralism
 - Lack of proactive policies from government
 - Lack of proactive management of resources
 - Introduction of weeds and diseases
 - Over development
 - Over-use of water resources
 - Biodiversity issues
- Urban
 - Over-use of resources
 - Contamination of waters
 - Weeds
- Overall
 - Lack of understanding of system
 - Water extraction for intensive development
 - People pressure focused on a couple of core points
 - Weeds and feral animals
 - Loss of biodiversity
 - Drought!
 - Overexploitation of water resources and inappropriate uses
 - Lack of framework to manage these uses
 - Lack of knowledge about water values
 - Water extraction from the Basin too high overall
- Government policy – funding – short term vs. long
- Unsustainable land use

- Cotton
- Tourism
- Water extraction and diversion
- Climate change
- Failure to engage and recognise all LEB stakeholders
- Lack of employment and training for local people
- Population loss – can't transfer culture
- Indigenous and European knowledge becoming fragmented and lost for future generations
- **What needs to be done to protect and enhance these values?**
 - Support the LEB process
 - Whole of Basin process is the beginning of it – needs to be coordinated
 - Development and implementation of community-driven strategic plans in partnership with government
 - Information and communication
 - Applied research for management (often needs to be long term)
 - Framework for protecting sustainable co-existing uses of different parts of the LEB
 - Ensure process involves all stakeholders in partnership
 - Cohesive management between players and across boundaries (agency/people/borders)
 - Determine human stocking rate
 - Education of all stakeholders – delivering method billboards not effective
 - Develop understanding of the values of water in the area
 - Quantify amount of water taken out of system by tourists
 - Recognition of water for 'mental health'
 - Site of green grass, refreshing especially when so dry
 - Recognition of tourism as a user of the landscape with impacts
 - Look to other jurisdictions for initial guidance eg. Tasmania
 - Research and resources
 - (Financial pressures) Slow down process – not lose values
 - Cultural exchange may teach us different concepts to help with understanding and management
 - Collect oral histories
 - Local authorities should encourage water preservation, ie. water tanks, use of grey water
 - Fencing not always a solution but can benefit small areas like mound springs, waterholes
 - Spread stock water points to take pressure off creeks and waterholes
 - More regulation on water use by large mining companies
 - Pastoral companies should have a positive training and employment program for Indigenous people

THEME 2: Water for Wildlife and Nature Conservation

Overview Presentation River and floodplain ecosystems of the LEB

Prof. Stuart E. Bunn
Cooperative Research Centre for Freshwater Ecology
Centre for Catchment and In-Stream Research, Griffith University, Nathan, Qld

[See Presentation at Appendix A2](#)

Introduction

There is growing acceptance by scientists and managers (and the broader community) that rivers and their associated floodplain and wetland ecosystems are legitimate users of water (Richter *et al.*, 1997; Naiman *et al.* 2002). In part, this is due to the recognition that the natural flow regime has shaped the evolution of aquatic biota and ecological processes (the natural flow paradigm) (Poff *et al.* 1997; Bunn & Arthington, 2002). However, a key challenge remains to counter the notion that 'water going to the sea (or to wetlands) is wasted'. This requires a better articulation of the links between flow regimes and biodiversity, and the consequences of changing flow regimes. It also requires recognition of the ecosystem services provided by rivers and wetlands and the real costs to society if these systems become degraded by human activity (e.g. Postel & Carpenter, 1997).

Aquatic ecosystems of the LEB

Rivers of the LEB differ markedly from those in the temperate zones, particularly in terms of the unpredictable and highly variable nature of their climatic and hydrological regimes, and their associated physical, chemical and biological character. The combination of flow variability and geomorphic complexity creates a distinctive *boom and bust* ecology, characterised by episodic intense reproduction and high productivity by opportunistic plants and animals. The physical nature of the rivers in the LEB has been shaped by the interaction between flow and topography, soils and vegetation. Regional climate, especially the high rate of evaporation, is also a strong driver.

Although some aquatic plants and animals can utilize ephemeral aquatic habitats, the larger waterbodies represent the only permanent aquatic habitat for much of the biota during extended periods of low or no flow. In the case of long-lived organisms like turtles (80+ years), very few waterholes appear to be sufficiently permanent to support mature populations. The aquatic biota is not particularly diverse, compared with other large rivers of the world, but there is a high level of endemism. Several new cryptic species have recently been identified (e.g. freshwater mussels) and it is likely that more will be uncovered as research effort intensifies (Sheldon 2002). Furthermore, many aquatic species with broader distributions are still common in the LEB but have reduced distributions in more disturbed dryland river catchments (e.g. the Murray-Darling).

High turbidity is a natural feature of the waterholes, with light penetration required to sustain aquatic plant life often restricted to less than 30 cm. Despite this, waterholes often have a productive band of algae restricted to the shallow littoral margins. Recent work has shown that this *bathub ring* of algae is a major source of energy for the aquatic food web, sustaining large populations of snails, crustaceans and fish (Bunn *et al.* in press; Sheldon 2002). It is worth noting that many terrestrial species that use riparian and floodplain habitats are also highly dependent on the waterholes.

Rivers of the LEB are renowned for their episodic floods that extend over vast floodplains. These undoubtedly have a major influence on floodplain soils, the composition and dynamics of

vegetation communities, and pasture production. They also give rise to a boom of aquatic production, and inundation of floodplains provides a rich source of food for aquatic species, as well as waterbirds. Many aquatic species have life history strategies that enable them to capitalise on these boom periods. There is evidence that 'clusters' of floods produce a cumulative response from the biota, and this pattern of flow may be of key importance for the persistence of aquatic populations during extended dry (bust) periods.

LEB Rivers dramatically fluctuate between being highly fragmented with numerous disconnected waterbodies and highly connected with enormous tracts of inundated floodplain. High levels of physical connectivity (lateral and longitudinal) during floods allow widespread dispersal for many aquatic species. Little dispersal, if any, occurs between rivers and the catchment boundaries and Lake Eyre itself represent significant natural barriers to aquatic species. This is not the case for waterbirds, however, and variability in the timing of inundation of floodplains and filling of terminal wetlands across the LEB provides a mosaic of available feeding and breeding habitat (Roshier *et al.* 2001).

Although we often emphasize the 'boom or bust' extremes of dryland rivers, we must be careful not to overlook the role of small floods and in-channel flows. The relative importance of groundwater and surface water to the persistence of waterholes and their associated aquatic biota is poorly understood. Similarly, we have little appreciation of the importance of surface flow (versus groundwater) inputs of nutrients to waterholes. In addition to their effect on ecosystem processes, small floods and in-channel flows also may provide an important opportunity for dispersal for aquatic organisms.

Aquatic ecosystem health in the LEB

Although our information base is poor, it is generally recognised that rivers in the LEB are remarkably unscathed compared with those in the coastal regions of the continent and, especially compared with those in other arid regions of the world. Rivers are unregulated, with only minor alterations to the flow regime from small storages for towns and farms. There has been little draining or filling of wetlands, as has occurred in coastal catchments, and there is little evidence of eutrophication, rising salinity or the presence of other contaminants. The native aquatic fauna and flora appear to be largely intact, with a low incidence of exotic plants and animals, and several wetlands are recognised nationally and internationally for their high natural values.

There is no doubt that the biggest threat to ecosystem health of LEB rivers and floodplains is the alteration of flow regimes, in the broadest sense. Although large-scale river regulation is unlikely, the effects of flow diversion from flood-plain harvesting of water, small on-farm storages and direct extraction will influence the extent and duration of wetland and floodplain inundation, as well as the interval between flows and the overall pattern of physical connectivity. Sustainable limits for water harvesting are unknown and current attempts to set them are high-risk.

Isolation of extensive floodplain areas, through levee construction or poorly designed roadways is also a significant threat. More difficult to appreciate are the cumulative effects of vegetation change in the upper catchment, through direct clearing, fire and grazing. This may also affect sediment regimes and influence the physical nature of the waterholes and floodplains downstream.

It is important to note that it will be the smaller flow events that are the most vulnerable to change from these kinds of activities. Rapid drawdown of waterholes (e.g. from direct pumping) is likely to expose productive littoral zones and reduce algal resources that sustain populations of fish and crustaceans.

Illegal fishing is widespread and intensive in some areas, and threatens the long-term viability of some aquatic species. For example, deliberate injuring and drowning of mature turtles caught in illegal nets is evident in some highly visited waterholes. Degradation of riparian areas through overgrazing is a potential threat to some waterholes. Extensive use of waterholes by stock may also trample productive littoral areas and reduce water quality. Harvesting of dead and living

timber for campfires is unsustainable at some waterholes and the loss of logs and tree hollows is a significant threat to riparian biodiversity. Deliberate or accidental introduction of exotic species of aquatic plants, fish (e.g. carp, tilapia) and crayfish (e.g. redclaw) is a significant risk, especially from recreational fishing and the use of live bait. Intensive agriculture could introduce pesticides and herbicides into an area largely free of chemical contamination. Chemical control of the plague locust may also pose a significant threat to the biota of waterholes.

Information needs

We currently have a poor predictive capability because of the limited database on LEB rivers. Quantifying the likely hydrological responses of these systems to factors such as vegetation change or an increase in on-farm storages is characterised by a high level of scientific uncertainty, as are the consequences of climate change. Predicting the river health outcomes of such change is even more difficult.

Given the high ecological values of rivers and their associated floodplains and wetlands in the LEB, the consequences of making poor predictions are not trivial. We currently have little broad acceptance as to what a healthy dryland river should look like, and what might be the appropriate suite of robust indicators that allow us to monitor river ecosystem health in the LEB.

It is worth remembering, however, that monitoring alone is useful only for documenting declines. Any monitoring program for LEB rivers must be linked to clear management actions in order to achieve ecosystem health objectives.

References

- Bunn, S.E. & Arthington, A.H. (2002). Basic principles and ecological consequences of altered flow regimes for aquatic biodiversity. *Environmental Management* **30**, 492-507.
- Bunn, S.E. & Davies, P.M. (1999). Aquatic food webs in turbid, arid zone rivers: Preliminary data from Cooper Creek, Queensland. In: R.T. Kingsford (ed). *Free-flowing river: the ecology of the Paroo River*. New South Wales National Parks and Wildlife Service, Sydney.
- Bunn, S.E., Davies, P.M & Winning, M. (accepted with revision). Sources of organic carbon supporting the food web of an arid zone floodplain river. *Freshwater Biology*
- Naiman, R.J., Bunn, S.E., Nilsson, C., Petts, G.E., Pinay, G. & Thompson, L.C. (2002). Legitimizing fluvial ecosystems as users of water: an overview. *Environmental Management* **30**, 455-467.
- Poff, N.L., Allan, J.D., Bain, M.B., Karr, J.R., Prestegard, K.L., Richter, B.D., Sparks, R.E. & Stromberg, J.C. (1997). The natural flow regime. *BioScience* **47**, 769-784.
- Postel, S.L. & Carpenter, S. (1997). Freshwater ecosystem services. pp 195-214 In: G.C. Daily (ed.) *Nature's Services*. Island Press, Washington, D.C.
- Richter, B.D., Baumgartner, J.V., Wigington, R. & Braun, D.P. (1997). How much water does a river need? *Freshwater Biology* **37**, 231-249.
- Sheldon, F. (ed) (2002). *Dryland River Refugia*. Newsletter 1, May 2002, 16pp. Cooperative Research Centre for Freshwater Ecology, Canberra.
- Roshier, D.A., Robertson, A.I., Kingsford, R.T. & Green, D.G. (2001). Continental-scale interactions with temporary resources may explain the paradox of large populations of desert waterbirds in Australia. *Landscape Ecology* **16**, 547-556.

Theme 2: Summary of Panel and Discussion Group Session

The Panel for Theme 2 – Water for Wildlife and Nature Conservation consisted of experts in aspects of natural resource management of the Lake Eyre Basin and other inland river systems.

The Panel members were:

Prof Stuart Bunn - Griffith University
Ms Vanessa Bailey - Queensland Environmental Protection Agency
Assoc. Prof. Andrew Boulton - University of New England
Mr Angus Emmott - Lake Eyre Basin Coordinating Group
Dr Richard Kingsford - NSW National Parks and Wildlife Service
Dr Steve Morton - CSIRO Sustainable Ecosystems
Dr Julian Reid - CSIRO Sustainable Ecosystems

The Panel fielded questions from the floor and had a general discussion of the issues raised in the overview presentation. The following points were highlighted:

- Trampling at waterholes by stock is an issue. There is a need for control and fencing is considered to be part of the solution. The other side to the argument is the more waterholes you fence you increase the pressure on the rest of the unfenced areas.
- Tourism is putting a lot of pressure on the Basin especially in regard to the collection of firewood, camping, water extraction and waste disposal. There are dozens of players in the tourism industry and no peak body to regulate it. People are easier to control than many other problems such as ferals. Tourism can be managed through education, information and direction rather than regulation and restriction. Low impact tourism is sustainable. There are ways it can be done.
- The occurrence of weeds is an increasing problem in the Basin. Weeds are recognised as a global problem. Ways to control the problem need to be determined including planning, education and washdown facilities for vehicles.

The delegates were then split into five discussion groups and given a series of questions relating to Theme 2. The following is a summary of the focus group question session:

What do you consider to be the most important ecological values of the Lake Eyre Basin and it's river systems.

- The LEB is essentially pristine with natural flow regimes
- Healthy biodiversity
- Boom and bust ecology
- Intact ecological processes that could be translated for use elsewhere in Australia
- Uniqueness of the whole system – from gibber deserts to rivers
- LEB ecological values are not defined by state boundaries. Huge diversity virtually from the north coast down to almost the bottom of SA
- Underestimated ecological importance
- Robust ecological system that has evolved to cope with change and highly variable conditions
- Chance to create a benchmark of a healthy near natural system
- Prevention is better than cure – this is the LEB's advantage – economically + for conservation
- Nationally, LEB has high conservation priority
- LEB is not just about water resources; it's about the whole of the Basin. Dryland areas are just as important to consider in the overall ecology of the system
- International and national importance of waterbirds
- The national system can support a sustainable grazing industry given the right management

What are the threatening processes that may have an adverse affect on these values?

- Climate change
- Trampling by stock
- Water extraction and drawdown
- Barrier impacts such as dams, roads and levees
- Lack of knowledge and understanding
- Lack of solutions being proposed to graziers
- Tourism impacts
- Increased nutrient levels
- Woody weeds – gidgee and acacia encroachment?
- Lots of unknowns
- Lack of baseline data
- Lack of long-term studies to monitor change
- Local knowledge possibly not being recorded effectively

How much do we need to know in order to better manage and protect the Lake Eyre Basin river systems?

- Baseline data
 - Flora and fauna
 - Population estimates
 - Survival
 - Breeding
 - Land use impacts
- Identify places of ecological significance
- Monitoring – integrated monitoring for management
- Identifying ecological values
- Identifying and monitoring threats – small scale and large scale
- Learning from other places (research, management)
- Understanding ‘recharge’ and interactions
- River flows data
 - Gauging stations
 - Remote sensing
- Appropriate information and advice to land managers and public awareness
- Understand what land managers consider to be important and their knowledge
- Ecological interactions and processes – long term
- Water quality
 - What is normal/natural
 - Salinity
- What changes or conditions are natural and which are human induced?
- Future/potential threats
- Need assurance that policies, legislation, education, resources etc. are in place to manage sustainably

How can scientific and local knowledge be better used?

- There must be a need – stakeholder input
- Ensure total process
 - Collect
 - Integrate
 - Disseminate
- On-going commitment
- Local knowledge – case by case
- Communication must be in an appropriate mode

What are the most important knowledge gaps that need to be filled?

- Post RCD impacts on small mammals and other animals
- Inventory of everything – flora and fauna of Basin
- Enhanced gauging of all river systems for flow rates (natural flows)
- When are high use areas or waterholes at risk from tourism, grazing, etc – risk assessments needed, especially for deep waterholes
- What data is already available and where is it?
- Research inventory (what has already been done) and communication with local community groups eg. GDCC, CCCC or similar
- River health indicators – in both scientific and technical terms and layman's statement to involve the local community
- Collect oral histories of all topics
- Development of conceptual model layers on how this environment works.



THEME 3: Water For Making a Living

Overview Presentation

*Greg Campbell,
General Manager, Kidman Holdings Ltd, Adelaide.*

[See Presentation at Appendix A3](#)

The surface waters, and sub-artesian water supplies within this vast area are of vital human and natural importance. Keeping these waters in a state we can all drink, make a living from, swim in, or catch a fish in, provides the key benchmarks to rate our progress as individual users and as a community. There are 1,765 pastoral holdings within the Lake Eyre Basin carrying around 3 million beef cattle (10% of Australia's total herd) and 2 million sheep (2% of the present Australian flock). Pastoralism in the Lake Eyre Basin last year produced around \$700 million dollars in farm gate produce to be spread widely across employment, services, taxes and investments.



The fortunes on many of these properties are as variable as the seasons and river flows, with patterns of stock management across the Basin being matched to this variability. Flood pastures can produce yields of palatable vegetation as high as 10,000 tonnes per hectare, and averaging 3,000 tonnes over vast areas. Nutritional values can also exceed 10% crude protein, ensuring weight gains over 1.0 kg/day for up to 9 months following floods.

Many station homesteads rely on the quality and supply of surface water for drinking, washing and growing gardens for cooling effect, dust control, fresh produce and also visual amenity. There are many unspoken benefits to station life on a river or creek. There are also some risks to these water supplies and businesses. This is a delicately balanced system of flooding and drying with background salinity never far from the surface. The run-off from grazed landscapes can carry additional sediment and re-assign nutrients from the broader landscape, through the manure and urine of cattle camps, to waterholes. The size, number and placement of farm dams within

the landscape are issues for the grazing industry to resolve as development steadily increases. Roadworks across major drainages are increasing in complexity and have the capacity to re-direct water flows.

Some believe the key to sustainable development is the widespread adoption of Environmental Management Systems. The present forms of EMS, such as ISO 14000, appear expensive and likely to find only limited uptake. A more workable alternative could come through the incorporation of codes of practice into a sustainability module attached to existing QA programs such as Cattlecare.

Theme 3: Summary of Panel and Discussion Group Session

The Panel for Theme 3 – Water for Making a Living consisted of pastoralists, mining representatives and other land managers from the Basin. The Panel members were:

Mr Greg Campbell - Kidman Holdings Ltd
Mr Mike Chuk - Qld Department of Natural Resources and Mines
Ms Sharon Oldfield - Cowarie Station
Mr Charlie Phillott - Georgina-Diamantina Catchment Committee
Mr Ross Wilson - BHP Billiton
Mr Bob Young - Australian Agricultural Company

The Panel fielded questions from the floor and had a general discussion of the issues raised in the overview presentation. The following points were highlighted:

- There are mechanisms to harness and use overland flows. It is suggested that governments regulate and control the use of overland flows. People need to be encouraged to use what they already have.
- The protection and management of riparian vegetation from stock is a major issue. Buffer zones for riparian vegetation could be created. Fencing every watercourse is not a practical solution. Different buffers can be used for different watercourses. Good management of stock will ease the pressure such as relocating watering points, shifting stock to prevent overgrazing and determining and continually reassessing correct stocking rates and times.
- As new industries are created in the Basin the demand for water will increase. We should look at new ways and technologies to manage water such as recycling and sewage reuse. Overseas technologies need to be investigated.

The delegates were then split into five discussion groups and given a series of questions relating to Theme 3. The following is a summary of the focus group question session:

What is the importance of the Lake Eyre Basin river systems for sustaining viable industries?

- Need to ensure that consideration is given to the needs in the lower sections of the catchment – keep thinking of the people down stream (top to bottom)
- Think ahead – we need to stay open minded about how we use water and be open to new technologies
- Perceptions of water use – different ideas about future industries in the Basin
- Attitudes to irrigation in the catchment
 - Higher parts of the catchment – more discussion needed regarding the possibilities of sustainable irrigation practises
 - Lower parts of the catchment – less acceptable to introduce irrigation enterprises for LEB
- Some things that are tactically possible are not socially feasible
- Is the desire for water use linked with the viability of properties? Thinking about the size of the holdings in the upper parts of the catchment

What actions should industry be doing (eg EMS) to ensure the sustainable management of the Basin's water resources – in particular the pastoral/mining industries?

- Monitoring/recording – adapting processes to this environment
- Drought – prompting efficient water use
- Looking outside LEB for ideas; Australia and overseas
- Maintenance of sound management practices
- Integration of research and local knowledge and practices
- Plan and develop property in balance with the environment

- Large amount of water loss is natural and beyond our control due to the nature of the environment
- Methods of water storage should aim to reduce evaporation and be more efficient such as using polypipe and tanks
- Encourage quick conversion of water stored for purpose of irrigation
- Recognition of supply of fresh water for communities – how can they make use of it best? Acceptance may be at some sacrifice to ecosystem
- Use of watering points to manage grazing pressure on pasture and water
- Looking outside the system, other available water resources
- Taking more seriously the whole of basin approach requires knowing what everyone thinks
- Familiarise ourselves with the needs of others and their water management practices

How can current use of water and related natural resources in the Basin be better utilised to generate wealth, without degrading the Basin?

- Spread out watering points
- Awareness of biodiversity
- Efficient and effective use of greywater
- Consider alternative landuse
- Bush tucker gardening
- Better understand where water is being used
- Limit habitation of fragile ecosystem zones
- Acknowledge irrigation operators are highest users
- Ensure economics of operations before commencing
- Better education of where and how salinity occurs
- Improve design of structures to ensure capture of rainwater is maximised
- Improved recycling of water
- Consider options for improved efficiency or alternatives, eg. composting toilets and education on personal water use
- Use best practice for any cultivation, eg. zero till
- Develop or implement stock watering systems that minimise evaporation
 - Covered tanks
 - Shallow aquifer storage
- Use technology to monitor watering systems to minimise overflow or loss

What new industries or other opportunities could be developed in the future, and how would these industries impact on the water and related natural resources of the Basin?

- Tourism
 - New ways of managing – green pass – moving people through the landscape rather than focusing on water bodies
- Looking at water budget – before any new water use commences
 - How much water is available
 - How can we invest in more efficient water use/storage (+ reuse)
 - Come up with a water budget for new developments
 - Aquaculture

SYNTHESIS

Our journey has been going a decade. Where have we got?

Prof. Peter Cullen

[See Presentation at Appendix A4](#)

The presentations and discussions of this Conference have shown us that there are four overall themes that need to be considered to achieve the cooperative management of the Lake Eyre Basin. These are:

- Values
- Knowledge
- Process
- Influence

All those involved in the management of the Lake Eyre Basin need to share the values we consider to be important. Those of us who have been on the journey have learned to respect the ideas and dreams of each other, but there are still more values to include such as those related to tourism, tourism operators, Indigenous people and town dwellers.

How can this be done? We have to work on it. It will take time & energy, plenty of dialogue and a great deal of tolerance & listening.

We would all agree that the primary values of water are:

- Production;
- Life;
- Ecosystems; and
- Amenity & Mental Health.

I believe a vision for the Basin must take into account all these values so we can have:

- Healthy rivers, waterholes & wetlands;
- Healthy ecosystems & catchments;
- Innovative, competitive, clean & green industries; and
- Healthy regional communities.

In his opening address, Geoff Syme told us that the LEB doesn't have problems. The problems are people. Everyone involved in the LEB needs to be engaged and committed. *We must go slow to go fast.*

Knowledge is fundamental for the successful management of any resource. The knowledge gathering process is an ongoing one, and far as the Lake Eyre Basin is concerned, has only just begun.

The Scientific Advisory Panel has begun to gather this knowledge through a process of putting together Theme Papers on many of the natural and social issues affecting the Basin. Draft papers on Water in the Basin and Integrated Catchment Management are about to be released for comment. Others on river ecology and social issues will follow shortly. These papers will be quick summaries describing what we think we know about how the Lake Eyre Basin works. The draft papers will be circulated to stimulate discussion and to get the input of local knowledge.

The paper on Water in the Basin describes the three hydrological elements of the Basin. These are:

- the upstream tributary catchments where water flow is mainly channelised;
- the distributary flood plain of the channel country; and
- the lower system of terminal lakes and wetlands.

It is important to note that these elements are linked and that is why we need a whole of Basin approach to management. The paper on Integrated Catchment Management puts all the pieces together and describes how the whole system responds to the pressures from pastoralism, mining, tourism and so on.

Catchments are good for water issues, but less so for weeds and ferals. What happens upstream determines what happens downstream. Your immediate neighbours are important, and so are those further downstream.

Management can be described as deliberate actions to achieve a goal. To achieve this at a property or catchment scale you must know what your goal is, talk about how you will get there and take the appropriate actions in order to achieve that goal.

Regulation is often given as the solution to the many environmental problems we face. The trouble is that regulation normally comes after a disaster when it is too late. What we need is smart regulation which can only be achieved with knowledge. This knowledge can be used to predict what effects certain land management practices will have which then can be regulated to prevent any disasters.

The Lake Eyre Basin Knowledge Strategy will underpin the role of the Scientific Advisory Panel as the principal provider of scientific advice to the Lake Eyre Basin Ministerial Forum. The Knowledge Strategy will be an inventory of what we know from information sources such as the Theme Papers, the ARIDFLO Project, Wise and other current research as well as local knowledge gathered from the Basin community. From this we will be able to determine what we don't know and what we must know to ensure the sustainable management of the Basin and its resources. It is important that we get this research underway as soon as possible since this kind of research takes time and lots of money.

We need to understand the pressures and the affects they have on the Basin as a whole. These pressures such as land clearing, grazing, water extraction, tourism and groundwater-surface water interactions drive what we need to know, which in turn drives the river assessment and monitoring program and the research agenda.

The Pastoral sector has much experience & knowledge to offer in regard to managing the resources of the Basin. Together with the rest of the Basin community, the pastoral sector can work for solutions to the problems facing the Basin through the development of EMS and indicators of sustainability.

Overall we must get the process right from the beginning. This will take dialogue, trust and learning. The community has the influence to get what it wants. The Community Advisory Committee must say what it wants, often and loudly. It is also important to keep it simple. Always remember that preventing damage is 100 times cheaper than repairing it - if we can.

The Road Ahead

Looking back at how far we have come it's good to see that we are in front of most communities in Australia. The Lake Eyre Basin community is an empowered knowledgeable community. If we are confident and clear we will be able to get what we want and need to achieve the goals we set for ourselves that will benefit the community and the Lake Eyre Basin as a whole.

Thanks
Peter Cullen

WISE on the Cooper

R.T. Kingsford and S.T. Davis
NSW National Parks and Wildlife Service, P.O. Box 1967, Hurstville

[See Presentation at Appendix A5](#)

Background

Communities, natural resource managers and policy-makers need the best information to manage our rivers and wetlands, but it is extremely difficult to access all the information. To overcome this problem, we have prepared databases on the rivers and wetlands in several catchments, of which the Cooper is one. The core database, Water Information System for the Environment (WISE) is encapsulated in a quote by Samuel Johnson (1775), "*Knowledge is of two kinds: we know a subject ourselves or we know where we can find information upon it.*" WISE is the second part of this.

General Information

WISE is much more than a library catalogue of information or references. Library catalogues simply list titles, authors, publishers and sometimes keywords or abstracts. So, searching for information is always going to be limited by how much of a particular publication is 'captured' by the title. Unfortunately, a lot of relevant information for communities, managers and policy-makers is often missing from the title, limiting applicability. For example, only some titles of scientific papers identify what part of the world they are dealing with. Also, publications often have information 'buried' in the text. For example, a publication on frog ecology may have involved collection of water quality data, but this is not identified in the title, abstract or keywords.

WISE does two essential things. It links publications to a part of the world, so people can find out what is known about a particular wetland, creek, river or catchment. The other thing it does is 'capture' all of the information in a publication. We have read every publication and linked its 'environmental content' to more than 300 fields. You no longer have to rely simply on the title or keywords for your search. In the frog ecology study, the information on frogs is catalogued in the appropriate fields in the content database and the study is also highlighted under water quality. This provides an extremely powerful information tool for managers, scientists and policy-makers. It has some potential to allow managers and policy-makers access to the most up-to-date information.

All the references are cross-linked within a bibliographic database and a content database. The bibliographic database is like a conventional library with a list of authors, titles and abstracts if they exist. The content database links the contents of the publication to any of more than 300 fields if it is relevant. So any time you search for a particular subject, you will get a match for not only those publications with the information in the title but other relevant publications as well.

Wetlands, Creeks and Rivers, Catchments and Basins

WISE is built around a conceptual base of dividing the world of water information into a hierarchy of scales. At the finest scale, there are wetlands, then creeks and rivers. Next there is the catchment and finally the basin. Identifying what information applies to which part of the world is important. Sometimes information focuses on a swamp, a river, the whole catchment or even the whole basin. People identify with these different places. For a particular wetland, you can get more details of its location with a map.

An example might illustrate. You could imagine a study which focussed on the water quality of a particular wetland. Another study might take another approach and investigate water quality in rivers and creeks. A broader approach might look at water quality across the whole catchment. The final dimension is to look at water quality across an entire basin. All of these different types

of information need to be 'captured' in an easy to understand system, which is why WISE has this unique design. From one screen, a person can navigate across these scales with the same search request. Alternatively, you can focus on one of these scales such as wetlands, choose an environmental area of interest and obtain a list of wetlands where that type of information has been gathered.

Education

Access to relevant information provides a unique opportunity for people to find out what they want on a wide range of issues. The multimedia part of WISE allows people to 'see' the Cooper Creek catchment from the perspective of animations, photographs, videos and sound files. A hydrology animation offers an aerial perspective of the catchment and shows how water flows move down the creeks and rivers and flood the wetland systems. There are more than 200 photographs of the catchment which, in addition to videos and oral history interviews, enable users to get a visual impression of the catchment and the people who live and work there. Basic information, including multimedia, is provided on the towns such as Longreach, Barcaldine, Windorah and Innamincka, rivers such as Cooper Creek and the Thomson, Barcoo and Wilson Rivers, national parks and reserves, and important historic or cultural sites, for example the Dig Tree of Burke and Wills fame, that make up the catchment. Additional information is provided on the flora and fauna in the catchment and on the photographic collections of historical societies, libraries and government agencies. Three key environmental issues have been identified for each catchment - copies of articles and other material is provided on each of these key issues.

Finding Information

Powerful search tools allow you to look for the information you want easily but with enough flexibility to cope with the most difficult search requests. We have designed the WISE system to be as versatile as possible because people have different needs.

Quality Control

All references in WISE are for material that is publicly available. Every attempt has been made to identify all relevant publications by exhaustively searching on-line library databases, scientific information, regional and Government libraries and the reference lists of all publications. This produces a long list of books, proceedings and scientific papers, and other technical papers. No attempt has been made to leave out any information. If the information is publicly available, it will be listed. Consequently there may be contradictory information or inferences.

WISE also identifies which studies have been through a peer-review process. This is the 'bread and butter' of a scientist's work. It is primarily a part insurance process that the information presented in a study is of the highest quality. For peer-review, a research paper is submitted to a journal and the editor usually sends the report away for independent and often anonymous review by other experts in the field. Based on these experts' recommendations and critical analyses, a decision is made to publish or reject the information. This process provides some 'quality control' for the information.

Throughout the evolution of the WISE databases, there have been many contributors to the information system including, individuals, communities and organisations, managers, researchers, policymakers and librarians from the Department of Land and Water Conservation (NSW), Environment Australia, Department of Natural Resources (Qld), Department of Conservation and Natural Resources (Vic), the Department of Environment and Heritage (SA), the NSW National Parks and Wildlife Service, NSW Fisheries, NSW Agriculture, Lake Eyre Basin Co-ordinating Group and the Cooper Creek Catchment Committee.

Summary of Community Workshop on ARIDFLO Results

Michael Good
Senior Environmental Officer
SA Department of Water, Land and Biodiversity Conservation

Purpose of the workshop

The workshop was intended to be a general forum for discussion within the Lake Eyre Basin community of the results of ARIDLO investigations into the interactions between hydrology (river flows and floods) and the biology of the rivers

Workshop Structure

The workshop was structured into three parts:

- A. A series of short presentations about the project and the results
- B. Discussions in small groups focussed on three questions
- C. Discussion amongst the entire workshop group about major issues and the usefulness of the results for resource management

Workshop attendance

Although registrations had indicated that around 100 people may attend the workshop, only around 55 attended. This was still a good attendance given that the workshop was held on the Saturday afternoon. For some participants this was the fourth consecutive day of meetings.

Part B: Small group discussions

The key issues to arise from the small groups are summarised below.

Question 1. Are there any parts of the information that are not clear?

There was a mixed response to this question, ranging from an indication of too much to too little information having been presented. There seemed some difficulties in understanding some of the hydrological and macroinvertebrate results.

Question 2. Does this information fit with what you have observed? Are there any surprises?

In general it appeared that people thought that the results fitted with their observations but that the results added a lot of new information.

The most common surprise for people was that the results show that many biological processes are driven by multiple floods and interactions between floods and not one flood alone.

Question 3. Is there any information to be added?

Numerous very specific information needs were identified, some of which have been addressed in ARIDFLO but were not presented on the day, and others that are outside the scope of the project. Examples of these include the need for a better understanding of water quality issues, fish kills and fish migration.

Three important general issues were identified. These are:

- The importance of community information;
- The need for long term data and whether there is a role for the community in the collection of this data; and

- The need for similar work in other parts of the Basin such as the Georgina-Eyre Creek system.

Part C: Large group

Questions: Can this information be used in managing catchments or the Basin ? If so, how? If not what would make it usable ?

- A lot of new information and a lot to take in
- Information should also be presented qualitatively in the future
- Should use ARIDFLO information as input to risk assessment processes in Environmental Management Systems
- Should be used as input to Georgina Diamantina water plan and later in the review of the Cooper Creek water plan.

Lake Eyre Basin Ministerial Forum Meeting

The Lake Eyre Basin Ministerial Forum meeting was held concurrently with the first session of the Conference. The meeting was attended by the Commonwealth Minister for the Environment and Heritage, the Hon David Kemp MP and the South Australian Minister for Environment and Conservation, the Hon John Hill MP. The Queensland Minister for Natural Resources and Mines, the Hon Stephen Robertson MLA, joined the meeting by phone hook up. The Northern Territory Minister for Central Australia, the Hon Peter Toyne MP, also attended the meeting as an observer.

Outcomes

The following is a list of the key outcomes of the Lake Eyre Basin Ministerial Forum Meeting:

- Agreement to invite the New South Wales and Northern Territory Governments to join the Lake Eyre Basin Agreement and to keep them informed of Ministerial Forum decisions and initiatives;
- Agreement to enhance the Ministerial Forum Scientific Advisory Panel by appointing Professor Tom McMahon to provide advice on catchment hydrology issues, and Professor Geoffrey Lawrence to provide advice on rural sociology issues of relevance to the Lake Eyre Basin Agreement;
- Agreement to reconstitute the Ministerial Forum Community Advisory Committee in accordance with the provisions of the Lake Eyre Basin Agreement, and establish necessary secretarial and other support arrangements including the appointment of a part-time facilitator;
- Approval of the 2002-03 Ministerial Forum Budget and Workplan;
- Agreement to develop an Indigenous Reconciliation Action Plan consistent with the framework agreed by the Council of Australian Governments;
- Agreement to request the Scientific Advisory Panel to examine the implications of current land and vegetation management practices in the upper catchment area for the health of in-stream and floodplain ecosystems in the Basin;
- Approval of a number of high-level policies for the implementation of the Lake Eyre Basin Agreement, and the development of associated draft strategies in consultation with the Scientific Advisory Panel, the Community Advisory Committee and the Basin community;
- Agreement to develop an implementation plan for the Lake Eyre Basin Rivers Assessment and the release of an information brochure on the project; and
- Agreement to develop a Communications Plan for the Ministerial Forum, including the development of a corporate profile and logo.

A copy of the Birdsville Communiqué is at [Appendix B](#)

Summary of Community Forum

After the completion of the Ministerial Forum Meeting, the Ministers joined the Conference for the Community Forum. The Community Forum was introduced by Don Blesing which was then followed by the official welcome by the Mayor of Diamantina Shire, Mr David Brook.

The aim of the Community Forum was to give members of the Basin community the opportunity to have a face-to-face meeting with members of the Ministerial Forum.

The Chair of the Ministerial Forum, the Hon Dr David Kemp MP, then addressed the Community Forum and made the following points:

- The Lake Eyre Basin is a unique and pristine internationally important area. Governments and the community acknowledge its values.

- Governments cannot directly manage the Lake Eyre Basin in isolation from the community. The process needs community ownership and drive.
- The community has the greatest interest in the successful long-term management of the Basin. Now is the time to act to avoid the problems of the past.
- The Commonwealth Government is keen to work in partnership with the community through initiatives such as the Natural Heritage Trust, National Action Plan and the Community Advisory Committee.
- To have a whole of Basin approach to management we need to maintain cooperation across state boundaries. I am pleased the Ministerial Forum is showing a willingness to put politics aside to try to achieve this.
- The Ministerial Forum cannot work effectively without the advice of the community and the Scientific Advisory Panel. We will be seeking nominations from the community for the new Community Advisory Committee.
- The Ministerial Forum has endorsed the Rivers Assessment proposed approach for the Lake Eyre Basin. I'm confident that the information gathered through this process will be used effectively to ensure the best possible management of the resources of the Basin.

The following is a summary of some of the main issues that were discussed during the Community Forum:

- The process of community action is important in protecting the unique values of the Basin. Governments need unique mechanisms to support the Basin through funding and partnerships.
- There is concern that the whole of Basin approach to management cannot work if funding such as NHT goes to the states. Full cross border cooperation is needed, which can often be difficult to administer. Reforms are needed if resources are to be successfully managed across the whole catchment. It was suggested that catchment boundaries be used as the NRM funding regions and a body be established to administer this in each region.
- Many of the issues the Basin has are long term and need long term funding. Most of the programs such as ARIDFLO only have short term funding. You can't get proper information on how systems function in the short term to be able to make good informed management decisions.
- Key areas such as National Parks, the frontline for tourism in the region are under resourced and need more funding.
- It would be nice to have guaranteed long term funding for environmental programs. There is the desire to put more into problem areas and the Government is always looking for ways to channel more resources into priority areas.
- The work of the Community Advisory Committee is not finished and the changes to the CAC may affect the feeling of ownership the community has to the current process. The community is willing to participate in the new structure of the CAC and regional committees and need continued support.
- The traditional owners of the Basin need more acknowledgement and support. There is a need for increased Indigenous involvement in the management of the Basin. The Ministerial Forum is initiating the Indigenous Reconciliation Action Plan for the Basin that will address the issue of Indigenous involvement through processes such as consultation and the involvement of the whole community. We also must move beyond consultation to joint development and action.