Australian Government
Land & Water Australia

RIPRAP
RIVER AND RIPARIAN LANDS MANAGEMENT NEWSLETTER

CONNECTING COMMUNITIES

Improving river and riparian management is all about working with people, and yet in the natural resources management industry we don't tend to spend a lot of time on this topic. Social aspects of river management are talked about as important, but often end up as an 'add on' to a project, or funded separately. If we are to connect with the communities around Australia that are being asked to take on responsibility for natural resources management, we need to rethink this approach and merge the social and biophysical so that integrated solutions to the issues we are facing can be developed. Just as we have developed many different biophysical techniques to understand our environment, we need to use a range of different approaches to connect with communities.

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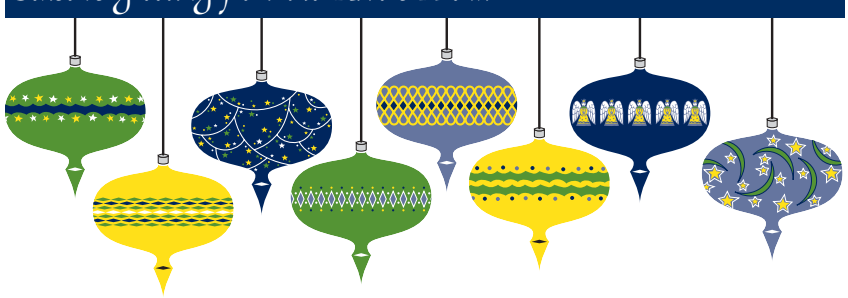
RIPArian lands:

WHERE LAND AND WATER MEET

From the Editor

Welcome to a bumper Christmas edition of *RipRap* that is designed to give you inspiration for 2005 by reading about the range of ways that different groups in Australia and overseas are 'Connecting Communities'. Whether it be through art, drama, song, thinking about the future, or just having a good time, we all need to celebrate and enjoy the work we do. It is easy to get bogged down, particularly when the scale of some of the problems our rivers are experiencing is so large. However, we need to remember that people are part of the solution rather than always being the problem. As such, we need to connect with the communities we work within so that we can understand how best to jointly develop solutions to the issues we face. We also need to remember how to have a good time (!) and to value the role we play in improving river management. Celebrate your successes, celebrate your involvement and celebrate the end of another year working towards improved river and riparian areas across Australia. I look forward to working with you in 2005!

Season's greeting from the Rivers Arena



Connecting Communities
learning from Canadian approaches

End of the Canada trip, Vancouver Island. Photo Tom Clarke.

By Siwan Lovett

In July this year I travelled to Canada to study a range of different organisations working in river management. The focus of my study was on 'capacity building' and 'knowledge exchange' techniques, with a particular emphasis on how science was used in community based decision-making. Studying another country's approach to the same issue enables new perspectives to be gained, as well as providing opportunities to import new ideas and adapt them to local environments. The following discussion is a condensed version of the lessons I learnt on my trip and now want to share with others.

Canada and Australia compared:

Watershed management in Canada involves Federal, Provincial and Municipal levels of government. Each province has developed different institutional arrangements for managing natural resources, with coordination between levels of government patchy and reliant on informal rather than formal engagement processes. Considerable interest was shown in the Australian model where Commonwealth, State and regional organisations are now working more closely together to deliver coordinated natural resources management outcomes. The Australian model is attractive because in theory, it means organisations working in a catchment are doing so on the basis of shared goals and objectives. In contrast, watersheds in Canada have several different government and non-government organisations working within them on river related issues. There is no single watershed plan to which all these organisations refer, rather, they each follow their own. Joint activities tend to be on a project by project basis, and largely dependent on informal relationships between the people involved, rather than through any formal inter-organisational agreements.

Although institutional coordination may be lacking in Canada, the strengths of Canadian organisations in engaging local communities is evident. Canadians believe in the value of taking time to build and cement relationships. River restoration operates at the grass roots level to engage people locally, without demanding that they take a broader watershed view. The act of being involved is seen as enough of a contribution. This means that there are high levels of local engagement and 'feel good' factor amongst those groups undertaking river restoration activities, particularly when this is consolidated with the designation of their river to a nationally recognised initiative such as the Canadian Heritage River System. Communities are encouraged to celebrate and connect with their river, and as most people in Canada holiday along a lake or river shoreline, this is something that is more easily achieved than in Australia where people tend to take their breaks at the coast.

'Capacity building' is a recognised term in Canada and covers a range of different activities. However, there has been a recent shift in govern-

The Canadian Heritage Rivers System was established in 1984 by the Federal, Provincial and Territorial governments to conserve and protect the best examples of Canada's river heritage, to give them national recognition, and to encourage the public to enjoy and appreciate them. More information can be found at http://www.chrs.ca/

ment from funding specific short-term programs labelled 'capacity building', to approaches that focus on establishing relationships and networks that are trusted, and within which community capacity building can occur. Most people working in the area of 'capacity building' are either permanent government employees operating within a locally based natural resources management agency and responsible for extension and outreach programs in their region, or consultants paid to run a specific extension activity. As such, capacity building is not singled out, but rather, incorporated into the more general work of engaging communities in natural resources management. This is an approach that Australia could learn from, as sometimes in our efforts to focus attention on a topic we tend to isolate it and make it 'stand-alone' as an area of concern. As we move to a new regional model for land and water management, now may be a good time to re-integrate the research and work we have done on capacity building into the more general day-to-day activities of river management.

Canada has several good examples of outreach and extension programs that engage people in protecting and restoring rivers. These programs use the term 'stewardship' to remind people of their connection to, and responsibility for, taking care of land and water resources. The strength of these programs is in their longevity (often been running for over ten years), consistency in message and the staff delivering that message; their ability to interest and engage people with their local river or stream, and extension materials that are easy to understand and connect with by people from a non-scientific background. The work of non-government organisations such as Cows and Fish, Pacific Streamkeepers Federation and Living by Water provide valuable information and approaches about how to connect with communities, with these organisations further supported by National initiatives such as the on-line Stewardship Centres, Canadian Heritage Rivers System, Canada Rivers Day and Yellow Fish Road. The following 'snapshots' in Table 1 provide overviews of these organisations and their ideas, with more information available from their websites.

The strengths of these initiatives are that they focus on a achieving a specific river related outcome (be it designation as a Canadian heritage river, celebration of rivers as special places, raising awareness about what goes down stormwater drains etc) and provide clear, well resourced guidelines on how to get there. They are also developed with people in mind, so emphasis is placed on fun, working together and generally having a good time.

History, art, drama, poetry and song are also highly valued as ways people can understand and relate to rivers. The canoe has become an iconic symbol for people's connection to rivers, and many songs, poems and plays use the canoe to link people with the water. The canoe is used as a powerful marketing tool by private and public organisations alike, to promote the positive associations people have with their river. This

TABLE 1: Snapshots of Canadian organisations involved in capacity building and knowledge exchange

Organisation	Approach
Cows and Fish www.cowsandfish.org	The Alberta Riparian Habitat Management Society — 'Cows and Fish' was established to foster a better understanding on how improvements in grazing management on riparian areas can enhance landscape health and productivity, for the benefit of cattle producers and others who use and value riparian areas. The program has been very successful in engaging ranchers, and is now entering its 13th year of operation. It aims to build relationships with ranchers so that they can understand the importance of riparian areas and, based on this understanding, work to improve their management of these areas on-ranch.

Living by Water www.livingbywater.bc.ca	Living by Water is a conservation and stewardship program targeted to individual urban, rural and seasonal waterfront residents, and other citizens interested in natural healthy shorelines. The goal of Living by Water is to improve the quality and quantity of wildlife habitat, including cleaner air and water.

As such, capacity building is not singled out, but rather, incorporated into the more general work of engaging communities in natural resources management.

CONNECTING COMMUNITIES — learning from Canadian approaches

Organisation	Approach
Pacific Streamkeepers Federation www.pskf.ca	The Pacific Streamkeepers Federation was initiated in May 1995, and is a non-profit society committed to supporting community groups involved in Streamkeepers activities throughout British Columbia and the Yukon. The program covers different aspects of stream management from awareness raising about what a healthy stream looks like, through to training on restocking and identifying different fish species.
Trout Unlimited Canada (Yellow Fish Road) www.tucanada.org	Trout Unlimited Canada (TUC) is a non-government organisation that was established in 1972 with a charter to 'conserve Canada's coldwater resources'. Today, TUC has over 4000 members in 17 chapters across the country. The organisation invests in a range of science and extension activities, and has an established reputation for its scientific credibility, as well as for its ability to work with federal, provincial and municipal governments.
On-line Stewardship Centres www.stewardshipcentre.on.ca/	An exciting Canadian initiative is the development of a stewardship website that links all provinces through the common goal of 'stewardship'. The website enables all non government and government organisations to load their material onto the site, providing it is informing people about natural resources management activities that are protecting, maintaining or restoring the environment.

recreational, and often spiritual connection, enables people who do not necessarily have an 'environmental' interest to get involved in river restoration. Recognition is also given to the many different ways people can 'know' a river, and in many cases recreation, heritage and cultural values appear to outweigh the value placed on the environmental assets a river may possess. The term 'heritage' is used to cover these other ways of 'knowing', with the natural assets of a river often not explicitly recognised, but rather viewed as the foundation upon which culture and history have developed in relationship to that waterway.

Despite the high levels of engagement, however, Canadian communities are not asked to take on responsibility for their river and watershed, but instead are encouraged to take an interest in their part of the river. The sense of urgency that pervades river restoration in Australia is not present in Canada. Restoration activities are 'place-based', where people can get involved in local activities that directly affect them. They tend to be short-term projects, that are well resourced, and with the staff managing the project being permanent employees of a locally based agency. A range of different government and non-government agencies provide opportunities for people to get involved in river restoration, with most projects focusing on specific interests such as the provision of fish habitat or wildlife protection. This often narrow focus is defended by people working on programs such as the Pacific Streamkeepers Federation that is primarily concerned with returning fish populations to formerly degraded areas, as they argue that people are better able to engage in environmental activities when they have one thing to focus on — in this case, fish provide the focus. In Australia, although a group may come together to address a particular issue such as fish passage, they are often encouraged to consider that issue within the broader context of what is happening upstream, downstream, and adjacent to the river. This approach generally leads to a more informed project being developed that considers the multiplicity of factors that might be impacting on the river restoration outcome, however, in some cases, it can stifle enthusiasm and overwhelm with the depth of understanding and technical assessments that are required. Agencies and communities need to work together to find a better balance so that projects can have a sound technical base, without losing the inclusiveness, fun and enjoyment that attracts people to get involved in the first place.

In Canada, knowledge exchange is not viewed as a topic that necessarily requires 'innovative' strategies, as the experience of those working with communities has confirmed that the best way to exchange information and build capacity is to establish long-term, well resourced relationships between all involved. The time it takes for someone to change their behaviour is recognised by those working at the local level as being between three to five years. In some instances, government will fund a non-government agency that has an established relationship

(e.g. Cows and Fish) to deliver a program, as it is more effective than trying to introduce new people and organisations into local communities. Non-government organisations play a substantial role in capacity building and knowledge exchange, as well as leading debate on issues such as the development of a natural resources management strategy for Canada. These organisations engage communities in river restoration activities, as well as independently funding science on issues that relate to their area of concern (for example, Trout Unlimited Canada).

A new discipline being used to assist knowledge exchange is 'conservation marketing'. Conservation marketing has been developed by the founders of the Living by Water project (see earlier snapshot) and builds on modern ethical business marketing, as well as the tools and techniques of community-based social marketing and environmental education. The purpose of conservation marketing is to move people along a continuum of awareness through education, to attitude and behaviour change, and eventually sustained behaviour change. The principles underpinning conservation marketing are that you need to be:

1. Customer driven

Marketing strategies speak of the central role of the customer in determining how companies do business. What does this mean for a river restoration initiative, and how does it translate into action? It is often the case that we present information in ways that assume the target audience has caused the problem, and are knowingly destroying habitat and reducing water quality. Conservation marketing is optimistic, presents choices and avoids preaching and apportioning blame.

2. Use promotion extensively and creatively

River restoration activities can be promoted through a variety of channels, be it radio through sponsored public announcements, awards for community groups, catchy themes and using local champions to promote action.

3. Provide a full service resource

To successfully engage with communities it is important that there is consistency in the message being delivered and the people delivering that message. In Australia there have been programs funding facilitators for short-term positions in regions (generally three years) to deliver specific projects. Three years is not long enough for someone to become settled, known and trusted in a region. For the facilitator, it is often half way into the second year when they start to feel they are achieving something, with their third year characterised by uncertainty about their future and needing to find a new position. Providing a 'full service' resource means that support is lasting and people can establish relationships that are not jeopardised by funding patterns that mirror political cycles.

4. Use a variety of distribution channels

Art, poetry and drama are all ways that we tell stories, and stories shape the way we manage our rivers and adjoining lands. There is a need in Australia to rediscover traditional knowledge and relevant myths to adapt and create new 'stories'. We must also integrate scientific knowledge into these stories, and recognise that science is a way of telling a story that people need to be able to relate to in order for it to make sense to them in their situation.

5. Encourage on-ground improvements

Workshops, web-based resources, field days, publications, ambassador programs are all ways to encourage people to get involved in river restoration activities. Canada, like Australia, has a number of different programs to promote and assist people make changes on-ground. It is important that a variety of mechanisms exist for people to get engaged.

6. Use a whole ecosystem approach

An ecosystem approach recognises the interrelatedness of the earth's air, water and soil cycles. This approach allows the full impact of non-point source pollution or toxic products to be considered, incorporating their impact on groundwater, and on organisms that live in the soil. The Living-by-Water project views shoreline corridors as ribbons of life and show the intersection of air, land and water as an intricate web. Waterfront residents are seen as the living zone of cooperation between the fragile waterfront and the uplands. The whole ecosystem approach places the resident in the middle of the issue, so that they become part of the solution rather than being the source of the problem.

Johnstone Canyon, Rocky Mountains, Canada. Photo Siwan Lovett.

These conservation marketing principles are being used to develop programs and workshops with public and private agencies wanting to better communicate with the general community about natural resources management issues. The key learning about the conservation marketing approach is that it is one in which customer needs are given a place of importance. Engaging the 'customer' is viewed as the most important part of accomplishing changes on-ground to improve river management.

Technical knowledge is valued in Australia, and community groups are working hard to build their levels of understanding and skills to be able to interpret quite complicated scientific information. An interesting development in Australia is that the value that has been placed on technical knowledge has led to community groups demanding more from science and research organisations, with some groups refusing to make decisions unless definitive, technically rigorous information is provided. For scientists, meeting these expectations is daunting and often not able to be achieved. As a result, we may need to reconsider the emphasis placed on science, so that it becomes an important, but not the only input, into decision making processes.

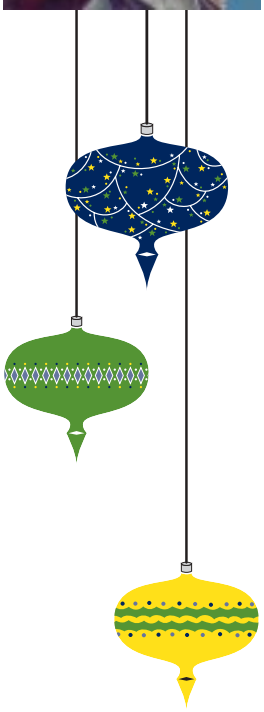
Conclusion

These observations about Canada and Australia serve to highlight the strengths and weaknesses of their different approaches to river restoration. Interestingly, the strengths of one country are the weaknesses of the other, creating ample opportunity for learning from each other. Ideally, river restoration needs to be inclusive, celebratory and stable, yet also institutionally cooperative and scientifically rigorous. Canada's strengths are in engaging communities, initiating action, celebrating, and using art, culture, history and drama as ways of 'knowing' a river. Australia's strengths are technical rigour, a greater level of institutional coordination and the involvement of communities who are building capacity to make strategic long-term decisions about the future sustainability of their river and environs. In Australia, we may need to rethink some of the technically based demands we are placing on community groups, and replace that with ways to celebrate and encourage involvement at a range of different levels, not just in formal committee structures. It would also be valuable to start exploring ideas around different ways of 'knowing' a river and try to place an equal value on 'scientific' and 'experiential' knowledge in our decision making processes. Australia can learn from the Canadian experience and start to tailor some of their strategies to local audiences. By combining the strengths of both countries we can continue to work with communities to improve capacity building and knowledge exchange strategies so that improved river and riparian restoration outcomes can be achieved.

References

Callaway, C. & Kipp, S. 2001. Conservation Marketing Tools and Techniques of the Living by Water project, Canada.

For further information — the full report of the trip is available on the website www.rivers.gov.au under Research Reports, and a shortened version is in the proceedings of the 4th Stream Management Conference.



CHECKING the story: multiple lines of

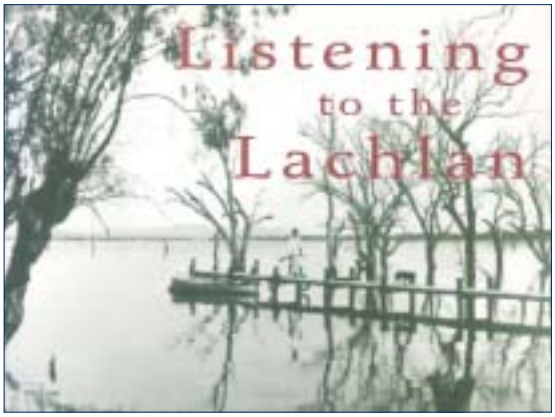
By Peter Berney, Debra Panizzon and Andrew Boulton

Increasingly, river managers are realising how useful oral histories are as a tool in not only indicating some of the changes that have occurred in catchments in the last 50–70 years, but also as a way of inspiring local residents to consider the health and restoration of their own river. Oral history is defined as:

> *'memories recorded by an investigator who deliberately solicits recollections of a particular past event or events and collates them around a theme or themes'* (Roberts & Sainty, 1997:2).

The approach derives from an investigative strategy used by historians to record history 'from below', that is, about people or lifestyles where written records are scant or unreliable (Ashton 1994). However, critics of the oral history approach attack its reliability and the impact of selective memory, prompting refinements in collection, validation, and substantiation of oral data. As long as efforts are made to validate the data and researchers are constantly vigilant about 'rural myths' and selective memories, we suggest useful data can be collected that can help set guiding images for river restoration.

Oral histories have only recently been considered by scientific researchers as a valid source of information about post-European impacts on Australian river systems. This change in attitude probably stems largely from the success of a book *Listening to the Lachlan* edited by Drs Jane Roberts and Geoff Sainty in 1996. Part of this acceptance accrued from the editors' professional qualifications and scientific credibility. Another part was due to the layout of the book that adopted five ecological themes (water quality, fish, river channels, water plants and river life). These themes were used to organise the oral recollections by time and location along the river, to provide a powerful narrative of the history of changes in these five features.



The book inspired the then Department of Land and Water Conservation in NSW, along with the Brunswick Catchment Management Committee, to commission an oral history of the Brunswick River. The history formed the basis for Peter Berney's Masters thesis that was supervised by an aquatic ecologist (Andrew Boulton) and an educationalist familiar with analysis and validation of qualitative data (Debra Panizzon). Peter's thesis describes recollections by 33 interviewees who were aged between 48 to 94 years when interviewed in 2000–01. These oral histories focus on themes similar to those of Roberts and Sainty (1996), interspersed with text describing features of the river's ecology and illustrated with historical photographs. A 'coffee-table' book is now being prepared from this work, recognising that this is a good way to return something to the community of the Brunswick River who so generously shared their recollections and memorabilia.

The Brunswick River drains a coastal catchment of 492 km^2 near the NSW/Queensland border. The first Europeans in the area came to cut cedar (*Toona ciliata*) in the 1840s, but by the 1880s this resource was exhausted, and the area became settled by farmers exploiting the fertile soil and subtropical growing conditions. Dairying was popular until the 1970s when it became economically unprofitable. Bananas were first planted in 1911. Production peaked in 1922 but crashed in the mid-1920s due to 'Bunchy Top Disease'. Production was reestablished in the 1930s with the advent of new varieties and chemicals to control the disease but the area under plantation has declined, and tourism is now a major industry.

A picnic party circa 1909. From "Listening to the Lachlan", image courtesy Jeannette Hildred.

evidence help support an oral history of the Brunswick River, NSW

During interviews the catchment residents recalled a number of changes in the river and its catchment over the past 50–60 years. The first major recollection was the increase in the number of trees in the catchment in recent decades. While generally acknowledged as a good thing, one species, the Camphor Laurel, has become a weed. It has invaded the riparian zone in the middle reaches of the Brunswick River around Mullumbimby. It grows in dense thickets and excludes almost all other riparian species. Another common recollection concerns changes in the nature of the main channel in the river. Fishing and boating are common recreational activities but a build up of sediment in the river, due to erosion of gravel roads and riverbanks, has restricted where boats can go and fishing enthusiasts report that traditional fishing holes are getting shallower. A third change in the river that many interviewees described was deterioration in water quality. Swimming in the river, especially at the estuary at Brunswick Heads, has been a recreational activity for many people since childhood. In the last ten years many swimmers have suffered ear and throat infections following swimming in the river at Brunswick Heads. The cause of this poor water quality is believed to be inadequate treatment of sewage at several treatment plants along the river. In terms of river management many people would like to see the sedimentation and the water quality issues addressed to enhance the recreational experiences provided by the river. Others, particularly those whose properties have direct access to the river were also interested in exploring ways to control the spread of Camphor Laurels and encouraging the return of traditional native riparian species along the riverbanks.

The interview findings discussed above have been validated by a range of different sources. Data validation is a crucial aspect of all oral histories. Roberts and Sainty (1997) provide a useful 'checklist' for the value of oral history for gathering ecological data:

1. Time specific — can the information be pinned down to a specific time?
2. Spatially explicit — can the information be linked to a particular place?
3. Type of information — are the data quantitative or qualitative?
4. Reliability — is the information accurate or precise? For example, do all interviewees identify plants and animals consistently?
5. Availability — is the information readily available from other sources?
6. Novelty — does the information provide new perspectives on the issue, from either a management or scientific viewpoint?
7. Time-effective — could the same or similar information be gained in other ways?

In the Brunswick River study, most of the data satisfied these criteria.

1 & 2: Time specific and spatially explicit

By setting temporal bounds within decadal scales and dividing the river system into broad sub-catchments, the first two criteria could be met.

3: Type of information

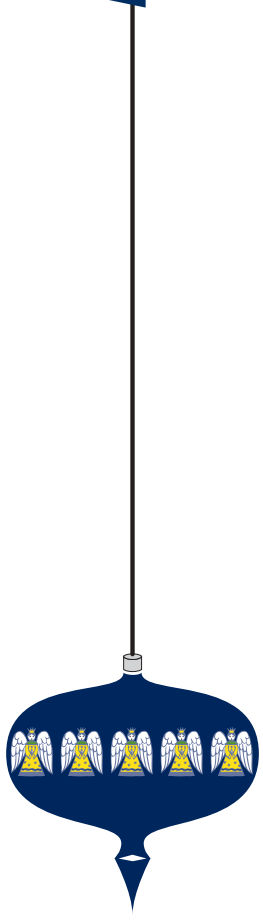
Data were qualitative, but sourced from a range of evidence including oral records, photographs, pictures and sometimes news clippings. The validation of oral history by these other sources is called 'triangulation'. The strength of this triangulation approach lies in the high degree of verification, strengthening the reliability and validity of the research represented by the fourth criterion.

4: Reliability

Reliability relates to the extent to which data collection, analysis and interpretation remains consistent so that independent researchers can replicate the study (Wiersma 1995). This is a prerequisite for validity, which refers to the extent to which results can be accurately interpreted and generalised to other situations (Wiersma 1995). In the Brunswick study, care was taken in selecting representative and credible (had lived in the area for considerable time) interviewees, using semi-structured interview protocols with a core set of questions, conducting interviews within a specified time period, and taping interviews for transcription resulting in an accurate data record.

5: Availability

Validity relates to the fifth criterion of availability because methods of triangulation need access to other sources of evidence to verify oral accounts.



6: Novelty

Further, the sixth criterion of novelty of the viewpoint can be explored with further questioning in a way that written records can not. In this way, oral histories are enriched through their capture of people's beliefs, values and cultural perceptions.

7: Time effectiveness

Criterion 5, availability, may also relate to Criterion 7 where it is more a matter of the time effectiveness of recovering information from a range of data types. For example, searching through past issues of newspapers for features of river ecology can prove far more time-consuming than directed interviews.

Before conducting an oral history of a catchment, we suggest there are several issues worth considering. The first is to see whether there are appropriate sources of corroborative material held by regional libraries, local historical societies or newspapers and archives. Secondly, the gathering of this information is substantially facilitated by having a core group of people who have lived for a long time in the catchment and are willing to share their memories. Active members of the community who can draw on this information and have the trust of the interviewees are often pivotal to the success of a collation of oral histories. Taping interviews and taking a scanner to scan documents that the owners may not want to loan helps preserve the data, but it is crucial to obtain ethics clearance and the written permission of the interviewees. Finally, it helps to discuss approaches with other researchers who have conducted oral histories so that the questions are as effective as possible, data can be validated, and the results drawn together into a coherent body of work.

The Brunswick oral history reinforces the role of the river in the lives of catchment residents and those people that have been coming to the river for holidays since their childhood. The oral history process provided participants with an opportunity to examine the link between the biophysical aspects of the river and human quality of life. For many of those interviewed the Brunswick River and its catchment provides a 'sense of place' and the river is at the heart of the economic and social fabric of the region. Therefore, many people who have in the past seen the river as a resource which they can use without any apparent impact, can begin to see that there is a need to look after the river, and to monitor the impact of the growing population in the catchment so that it can play a similar role in the lives of future generations as it did in their own.

Acknowledgments

We are grateful to Patrick Pahlow (Department of Land and Water Conservation, now Department of Infrastructure, Planning and Natural Resources) and Ros Elliott (Brunswick Catchment Coordinator) for instigating the project on the Brunswick River and facilitating funding for the field work, and to the many residents who so willingly and freely shared their experiences.

References

Ashton, P. 1994 *On the record: A practical guide to oral history*, North Sydney, NSW: North Sydney Municipal Council.

Berney, P. 2001 'Oral history as a tool in catchment management'. Armidale, NSW: M.Nat.Res. thesis, University of New England.

Roberts, J. & Sainty, G. 1996, *Listening to the Lachlan*, Potts Point, NSW: Sainty and Associates.

Roberts, J. & Sainty, G. 1997, *Oral history as a tool in historical ecology: Lachlan River as a case study*, Canberra, ACT: CSIRO Land and Water Consultancy Report 97-20.

Wiersma, W. 1995, *Research methods in education*, Massachusetts, USA: Allyn and Bacon.

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RiverLandscapes

Rivers Research Reports 2004 CD

Based on the success of the 2001 and 2003 River Research Reports CDs, we have a produced a new CD that has all the publications, including all the *RipRaps*, featured on our website. The CD contains our *Riparian Technical Guidelines Updates*, *Fact Sheets*, *Research Reports* and more. It has an easy to use index so that you can find what you are looking for quickly and easily. The CD is free and available from CanPrint Communications on 1800 766 616.

Technical Guideline number 5 — 'Managing high in-stream temperatures using riparian vegetation'

Peter Davies, Barbara Cook, Kit Rutherford & Terry Walshe, 2004

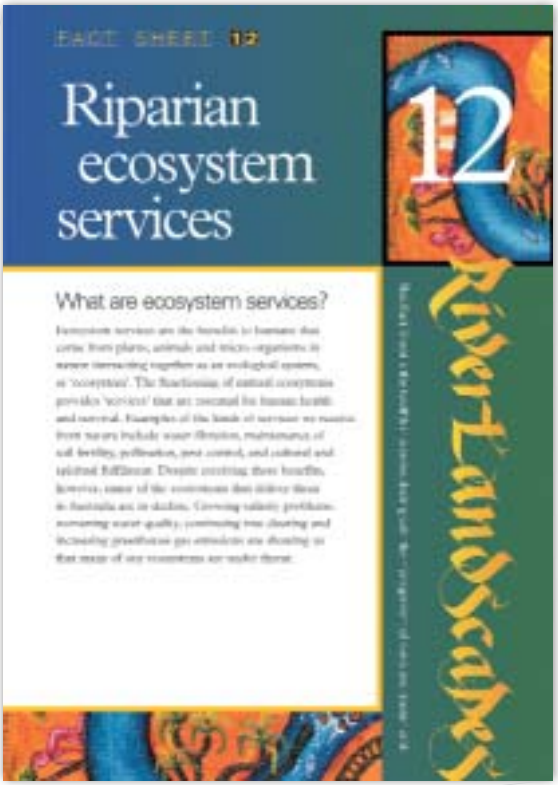
A new River and Riparian Management Technical Guideline is now available focussing on the impact of high in-stream temperatures on aquatic organisms. The Guideline provides information about the thermal tolerance of key aquatic species and provides guidelines for river managers about how to use riparian vegetation to control water temperature.

Available from CanPrint Communications 1800 776 616 and on the website www.rivers.gov.au

Fact Sheet 12 — Riparian Ecosystem Services

Ecosystem services are the benefits to humans that come from plants, animals and micro-organisms in nature interacting together as an ecological system, or 'ecosystem'. The functioning of natural ecosystems provides 'services' that are essential for human health and survival. Examples of the kinds of services we receive from nature include water filtration, maintenance of soil fertility, pollination, pest control, and cultural and spiritual fulfilment. This fact sheet discusses the important ecosystem services provided by riparian lands, and encourages incorporation of this knowledge into land use and management within riparian areas.

Available from CanPrint Communications 1800 776 616 and www.rivers.gov.au



BUILDING CAPACITY for environmental sustainability using the visual and performing arts

By David Curtis

For the last two years I have been researching how the visual and performing arts shape environmental behaviour and how they might be used by those promoting environmental sustainability, particularly in rural areas. The project is being jointly funded by Land & Water Australia and the Rural Industries Research and Development Corporation.

After 20 years coordinating community environmental programs, I came to the realisation that many of the key environmental challenges that Australia is facing require the engagement of the whole of society to be reversed. Such problems include the greenhouse effect, soil salinity, declining water quality, declining biodiversity and urban sprawl. I began wondering if the arts might have a role in providing that engagement.

The project is based on interviews with over 100 people in Australia and overseas, including farmers, extension officers, Landcare group members and people working in the arts, as well as several case studies that have incorporated the visual or performing arts in environmental initiatives.

The Bread and Puppet Theatre *in Vermont USA stage large outdoor performances, some of which celebrate the natural environment. Photo David Curtis, July 2004.*

There are three main pathways through which the arts can shape behaviours that are more environmentally sustainable.

1. The first is by aiding communication, whether this be in the education or extension context, or whether it is more as a marketing tool. The visual and the performing arts have a special ability to synthesise complex ideas and to present them in a simple, digestible form. Well designed images, as used in some Landcare programs, can articulate a vision for an ecologically sustainable landscape that encapsulates best practice land management. Large art-environment events can have a celebratory role, such as the event in Armidale NSW in 1998 *Nova-anglica: the web of our endeavours*, that celebrated two decades of environmental restoration in the wake of devastating rural dieback. The arts are particularly good at articulating a critical voice to prompt new ways at looking at problems. Many political cartoons function in this way.

2. The second pathway is to connect us more meaningfully with the natural environment. Many artists are inspired by the natural environment, and their artworks or performances can evoke a strong sense of connection without being didactic. Impressive examples of this include outdoor performances by groups like 'Welfare State International' in the UK or the 'Bread and Puppet Theatre' in the US. Outdoor pageants in Australia that are linked to riparian health and ecology include the Rivers of Light Festival at Lismore, the Twin Rivers Festival in Gunnedah, and the Enchanted River Festival in Albury. These have the effect of celebrating the river and involving a large number of people from the community. Such events can strongly engage the emotions and encourage people to reflect on their relationship with the environment, as I found in

The Moonflower blooms. *Over 250 performers, including dancers, choirs and orchestra from the rural city of Armidale NSW stage the finale of the ecological chorale* The Plague and the Moonflower *by Richard Harvey and Ralph Steadman at the Woodford Folk Festival. Photo Jim Vicars, December 2003.*

one of my case studies, the ecological chorale *The Plague and the Moonflower*, which was performed by over 250 members of the Armidale community in NSW to audiences totalling over 10,000 people. Sculptures in forests function in a similar way — attracting people to natural areas in large numbers, as for example the Grysdale Forest in the UK.

3. A third pathway is where the arts are linked with measures to improve sustainability. In the rural context there are impressive examples where the arts have been integrated with farm forestry, rural regeneration, and land rehabilitation initiatives, such as those done by the group 'Littoral' in Lancashire UK. In Australia, some farmers have redesigned their properties to incorporate conservation initiatives while being strongly influenced by principles of landscape architecture. In a different way the arts have a strong community development role, for example, when performances were used in a village in Exeter, Wales, to heal a rural community traumatised by foot and mouth disease. In urban areas public and community art can be incorporated into urban planning designs which reduce greenhouse gas emissions through excellent public transport and facilities for walking and bicycling. Striking examples of this include Portland, Oregon in the USA, and Oslo and Trondheim in Norway.

This project has found that the visual and performing arts have an important role in capacity building for environmental sustainability. They provide a means of connecting with communities and engaging a wider audience as they attract interest, excitement and provide different ways to express the link people have with the environment they live in.

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For more information about other social and institutional research projects, go to

www.lwa.gov.au/sirp/

SHARING A VISION for landscape design

Trudi Ryan, Land & Water Australia

Farmers, scientists and catchment managers are working towards a shared vision for biodiversity conservation in the extensive agricultural regions of eastern and western Australia. Dr David Freudenberger of CSIRO Sustainable Ecosystems leads the *Testing Approaches to Landscape Design in Cropping Lands (CSE9)* project nationally. This work is funded by the Native Vegetation R&D Program of Land & Water Australia. In the Western Australian wheatbelt, a team of CSIRO scientists have recently completed three major reports for this project — Dr Andrew Huggett (*Landscape Design for Bird Conservation in Buntine-Marchagee Catchment*), Lesley Brooker and Dr Ted Lefroy (*Habitat neighbourhoods for conserving viable populations of birds*), and Dr Jeff Short (*A Test of the Focal Species Approach in Western Australia*). Dr David Freudenberger has also completed an *Overview & Recommendations* report that draws together the key findings of these three reports and a report *Do birds meet the needs of other taxa in the NSW Riverina?*

In the Buntine-Marchagee Catchment, Andrew and his team of Blair Parsons, Lyn Atkins and John Ingram have used a modified focal species approach to develop a landscape design that will guide future revegetation and habitat management programs. A unique aspect of this part of the project, which is also funded by the WA Department of Conservation and Land Management (CALM), is the community 'road testing' Andrew and his team have conducted with farmers and other stakeholders. This process allows landholders to assess the potential impact on farm operations of proposed actions such as planting new native vegetation and fencing, and make suggestions to improve the feasibility of the design. "Connecting the science, farming and landscape management communities through these activities and consultation initiatives will ultimately improve the adoption and implementation of the landscape design" said Dr Huggett.

The 181,000 hectare Buntine-Marchagee Catchment is in the northern wheatbelt of Western Australia, approximately 280 kilometres north of Perth. Farmed principally for wheat and sheep, the Catchment is identified by CALM as one of six Natural Diversity Recovery Catchments. The Catchment supports a variety of floristically-diverse vegetation types including sandplain shrubland, heath and *Banksia* woodland, York Gum, Gimlet and Salmon Gum woodlands, Mallee, *Acacia/Melaleuca* shrubland, samphire-dominated wetlands and a biologically significant system of saline braided channels. In turn, these vegetation communities support a range of native vertebrate and invertebrate fauna, some of which are becoming increasingly rare.

Nature reserves and other areas of crown land only constitute about 5% of the Buntine-Marchagee Catchment, the remaining 95% of the Catchment is under private ownership. "Conservation initiatives on private land are therefore crucial to the on-going survival of regional biodiversity," Andrew said. Effective community involvement is essential to sustainable natural resource management, however, the uptake of landscape designs formulated by research agencies for landholders has traditionally been poor. As a result, Andrew and his team have made community consultation an integral part of their landscape design process.

To develop the landscape design, five native bird species were selected as focal species due to their sensitivity to remnant area, habitat patch size and isolation, and remnant condition. Using these indicators, the team developed a landscape design aimed at retaining existing bird populations and enhancing and re-connecting elements of their habitat in the landscape that will also benefit a range of other native species. The team recommended a comprehensive revegetation program that involves replanting nearly 1361 hectares. Of this new vegetation, approximately 1093 hectares would be replanted as 'stepping stone' habitats to link existing patches of vegetation. Over 260 hectares would be replanted as 60 metre-wide strips to link important habitats. As always, protection of existing remnant vegetation is a crucial management objective.

"A key criterion for the landscape design was practicality", said Andrew. "The design needed to be capable of being adopted and implemented by farmers under sustainable farm and business

management principles", he added. To this end, farmers and other land managers were encouraged to assess and contribute to the draft landscape design, which gave farmers a flexible yet strategic suite of revegetation and habitat restoration options. This process aimed to address stakeholder issues and concerns about the likely impacts on farm production costs, water use, access, capital costs associated with new fencing, tree and shrub planting, pest control and long-term biodiversity conservation and sustainable farm management planning. Andrew observed: "This required the design to be flexible, innovative and considerate of existing economic, social and environmental factors, especially in a landscape of increasing secondary salinity and ongoing loss of productive agricultural land."

To facilitate the process, the research team held a workshop and field day for farmers and other land managers, including CALM's Recovery Catchment Team. Each farmer had the opportunity to inspect the draft landscape design superimposed onto an aerial photograph of their property and to suggest practical improvements in line with farm operation constraints and other land management goals. SMARTBoard™ technology allowed the researchers to capture farmer opinion on the landscape design and incorporate their suggestions and alternatives into the planning process (Figure 1).

The research team will monitor community response to the landscape plan and the extent to which it is adopted and ultimately improves the connectivity and condition of vegetation in Buntine-Marchagee Catchment and the biodiversity it supports. This flexible, collaborative approach to landscape design represents a significant step forward in conservation planning and implementation that is likely to achieve significant on-ground biodiversity benefits.

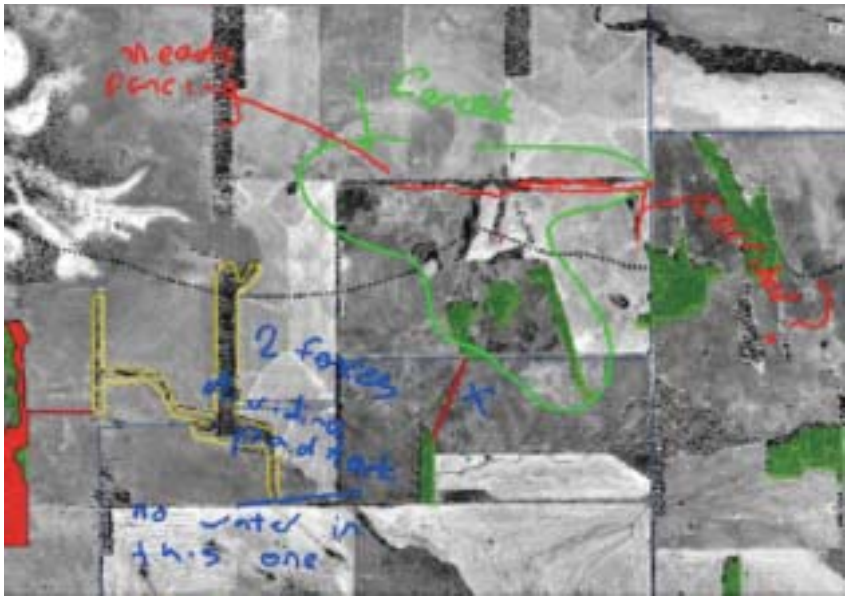

Figure 1. *Partners in landscape design. The research team was open to viable alternatives in landscape design provided that the farmer understood the reason behind a specific recommendation. In the example illustrated, the goal of the proposed corridor (in red) was to increase connectivity among existing remnants for dispersal-limited bird species. The farmer suggested an alternative location for the corridor that connected remnants of roughly equal size but with less impact on farm operations.*

Presentation of draft landscape design for bird conservation in the Wallatin Creek Catchment, central WA wheatbelt, August 2003 by Technical Officer Blair Parsons to local farmers.

References

Huggett, A., Parsons, B., Atkins, L. & Ingram, J. 2004, Landscape design for bird conservation in Buntine-Marchagee Catchment, Western Australia. Technical report by CSIRO Sustainable Ecosystems (Perth) for Land & Water Australia and WA Department of Conservation and Land Management.

Huggett, A. & Freudenberger, D. 2004, A design for life: bringing back the birds in our farming landscapes, *Thinking Bush*, no. 3, pp. 24–25.

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This project in funded through LWA's Native Vegetation Program

www.lwa.gov.au/nativevegetation/

Eureka Prize for water research

Native fish can't jump — carp jump into a trap

"Eureka", said Alan Williams one day after a livelihood of watching the Murray River as the Torrumbarry Weir keeper at Gunbower, near Echuca on the NSW-Victoria border. He observed that carp jump. Native fish don't. That's the carp's Achilles heel. Alan together with Ivor Stuart from Victorian Department of Sustainability and Environment, with assistance from Goulburn Murray Water, have invented the world's first practical, low-cost method of separating invasive carp from native fish.

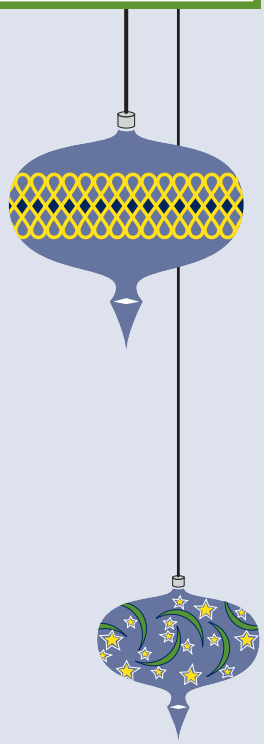
"We've deliberately chosen not to patent the cage," said Ivor Stuart. "We want to make the technology freely available for the good of rivers in Australia and around the world."

The trap collects 90% of carp without harming native fish. Alan and Ivor have won the $10,000 Land & Water Australia Eureka Prize for Water Research for their achievement in protecting the Murray River from carp. Andrew Campbell, Executive Director of Land & Water Australia said Alan and Ivor were outstanding entrants in this category. "The carp trap has been one of the fastest cases of development from idea, to proof of concept, to implementation of any environmental solution in the Murray-Darling Basin," he said.

Land & Water Australia thanks the external judges for their time and expertise: Don Blackmore, John Langford, Graham Harris and Ian Prosser. The carp trap project involved collaboration of the Australian Government Department of Agriculture, Fisheries and Forestry; the Murray-Darling Basin Commission; Goulburn Murray Water; Parks Victoria; the Victorian Department of Sustainability and Environment; the NSW Department of Land and Water Conservation; NSW Waterways; NSW Fisheries; NSW State Forests, K&C Fisheries and the Yorta Yorta Nation.

Carp are the rabbits of Australia's inland rivers. Introduced illegally in the 1960s, they've taken over many rivers — more than half the fish caught in the Murray are carp. Working with Ivor Stuart from the Victorian Department of Sustainability and Environment and his colleagues at Goulburn Murray Water, Alan devised a simple trap — as the fish swim upstream they are caught in the first cage of the trap. The carp jump out into a second cage, leaving the native fish free to be released to continue their journey upstream.

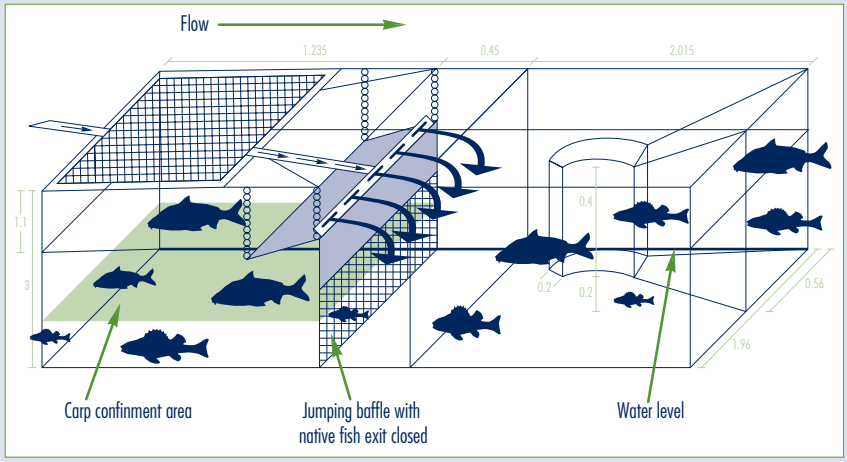
The Land & Water Australia Eureka Prize is awarded to an Australian individual, team or organisation for highly innovative research that has made, or has the potential to make, an outstanding contribution to the protection, sustainable use and management of Australia's water resources and water-dependent ecosystems.



The next challenge is to integrate the trap into carp management plans, and get community support for its use. Timing is perfect, as $30 million is being invested in fishways — watercourses to help native fish get past locks and weirs as they migrate up and down 2000 kilometres of the Murray. Each of those fishways will now be fitted with one of the carp traps.

"The carp separation cage won't remove all carp from the Murray," says Ivor Stuart. "Still, it is a powerful new tool which will enhance our capability to control carp and help the recovery of native fish populations."

The cage is attracting attention from around the world. The carp — a native of Asia — has also infested rivers in New Zealand, North America and Europe.



RIVERS as inspiration

By Penny Cook

My river begins its life as a crystal clear spring in the foothills of the northern end of the Kosciusko National Park. Its water is cold and sweet and flows surely over beds of moss and lichens, rocks and fine sand. Fish swim in its clearness and wombats live in burrows by its banks. The river is the centre of a plethora of lives, all intercepting and brushing up against each other in a complex whole. I am part of that whole, and part of the life of the river.

All these great photos by Chris Cameron, 'Snowgrass', tel: 02 6290 0747, snowgrass@bigpond.com

My partner owns 400 acres through which the Bull's Peaks River flows, and until it was burnt down in the recent bushfires, a small timber cabin sat on a rise above the river. When spending time at the 'Cabin' our lives are directly linked to the river. It provides water for survival, deep pools to swim in during the hot months, and spiritual renewal as we are immersed in the sights and sounds it offers. There is a softness to the land when seen in the context of the river. And yet it also reminds us of the potential for harshness as it crashes down a rocky gorge below where the cabin once stood, proclaiming its watery strength to the land it is part of. When I am living besides its banks, this river reminds me of the wholeness of things and I find it easy to compare the life of the river with the life of the community I work in.

My work community is Land & Water Australia, an Australian Government statutory authority that funds research into natural resource management. I am involved in the administration of all the project work that is done by the organisation around rivers. Although I am in an office well away from any river, my work constantly reminds me of the importance of rivers to communities all over Australia.

Communities tend to spring up around rivers for the obvious reasons of needing water to sustain life, agriculture and industry, and recreational activities — swimming, fishing, boating, etc. However, there are the less obvious gifts that rivers offer to communities that are sometimes acknowledged and sometimes not.

RIVERS as inspiration

Things such as a sense of place. Almost everyone I talk to about rivers has a special river or river reach that touches them on a deep level. We grow up around rivers and they are places to visit when we need nourishment of the soul, or a time of peace and contemplation.

My work community is similar in that the complexity of natural resource management creates a certain messiness that is difficult to put boundaries around. As with my river, the work is constantly changing and adapting to inside and outside influences. Sometimes it screams ahead at a breakneck rate, then it will slow and become tied up in detail and unforeseen difficulties; very much a case of two steps forward and one step back. The challenges continue but as I learn more, the ability to deal with them increases and despite the complexity of the tasks, I manage to find a way.

My community and my river are both complex systems out of which a natural order flows. When a group of people comes together to form a cohesive community, the dynamics are always non-linear because each person has different perspectives and brings different elements to the group.

The river analogy helps me make a comparison between the complexity of my work community and a naturally complex system. The movement of the water and the constant looping back of the eddies result in a system that is chaotic and yet has reaching the ocean as its main purpose. The river has a million ways of achieving its ultimate goal and shows a great deal

My river rushes and crashes its way down the mountain gathering speed and volume on its crazy path. It squeezes and rattles through rocky outcrops, and swirls through clear deep pools. Life constantly changes and revolves around the river. It gives precious water to a myriad of birds and animals, and life to its water living creatures. Its waters are cold and full of speed at its centre, and in its eddies, amongst the rocks at its banks, there are whirlpools of energy swirling around and looping back on themselves.

R I V E R S A S

All these great photos by Chris Cameron, 'Snowgrass', tel: 02 6290 0747, snowgrass@bigpond.com

As it makes its way further down the mountain towards the plain its banks become wider and its water deeper and slower in travelling. There are not so many rocks to find a way around and the bottom of the river is covered in small pebbles and fine river sand. Larger trees grow along its banks, and when they fall they create areas of safety for fish to breed and feed. The goal of my river is to join with a larger river system and eventually flow to the ocean. In all of its chaotic complexity the river manages to find its way, always in pursuit of its final goal.

I N S P I R A T I O N

of creativity in its pursuits. My work community emulates this way of being. It has a constant quest for certainty and a need to pin things down, and yet the very nature of what we do ensures uncertainty and constant change. Like the river, this community also shows a great deal of creativity in its pursuits.

Tom Atlee (Online, 2004) comments that 'When we go with the natural flow of forces in a situation, we don't have to use so much energy, effort, money, fuel, enforcement, etc. There is a smooth elegance to what we do.' I am able to look at my river and recognise a 'smooth elegance' in its rushing waters and its calm pools. Similarly, when I look at my work community I see a 'smooth elegance' in the great work we are achieving for the ongoing sustainability of our natural resources.

At the end of this short piece about my river and my community it seems clear to me that even an Australian Government 'bureaucrat' can have an important and lasting connection to a river. My river inspires and energises me to continue in my work, as no doubt, rivers all over this wide land are inspiring and connecting communities to be part of the important whole that is this earth we tread heavily upon.

For further information

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Reference: Atlee, T. 2004, *Polarization and Intelligence* (Online) www.co-intelligence.org/Polarization-Intelligence.html

RIVER MANAGEMENT: bridges we need to cross together

By Biz Nicolson, Kylie Nicholls and Fleur Flanery

Healthy waterways and creeks are the arteries of the Australian environment — they provide the water to sustain many different plant and animal communities and agricultural industries. Managing these water systems is a key component of running a profitable wool growing enterprise. In an effort to identify new productive and profitable solutions to managing natural resources on farm, Australian Wool Innovation Limited and Land & Water Australia have developed a unique program called Land, Water & Wool (LWW). An important area of research in the Land, Water & Wool program is the River Management and Water Quality sub-program (LWW-Rivers). This innovative sub-program aims to identify practical methods to improve waterway health and riparian management in ways that woolgrowers can incorporate into their grazing system in an economically viable way. In order to achieve this, the sub-program emphasises the importance of working with woolgrowers to understand, identify and invest in research that addresses their needs, as they relate to improving river and riparian management within the context of a commercial woolgrowing property. Whilst the focus of projects of this kind is generally on physical outcomes such as the kilometres of fencing completed, amount of trees planted, or the success of regeneration treatments, the LWW-Rivers sub-program believes that the real success of any natural resource project is when the mind or hearts of the farmers involved have been changed, and they have a long-term commitment to the project outcomes. Achieving and measuring this can be difficult, but the following discussion provides insights into the approaches being used to work with woolgrowers to overcome these challenges.

The Rivers projects

The LWW-Rivers sub-program has three projects tackling river and riparian management issues in three very different woolgrowing regions of Australia. The sites are located in the Southern Tablelands, the Mid-North region of South Australia of New South Wales, and the Midlands of Tasmania.

New South Wales

This project, which has been under way for two years, is focused on reducing gully erosion, a common problem for many woolgrowers in the region. A demonstration site has been established near Bookham and is linked to ten other gully-monitoring projects, which are part of CSIRO's Open Air Laboratory project. These projects aim to measure the impact of gully erosion and determine how much sediment and nutrients the erosion is delivering to the stream on-farm. Practical and cost-effective treatments, such as flow diversion, increasing vegetation cover and limiting stock access are currently being applied and monitored to assess their success.

Tasmania

This project has six sites established to measure the impact of different sheep grazing regimes on riparian areas and to quantify the cost effectiveness of different methods of revegetation. The project is working with woolgrowers to produce best management practices and fact sheets that will assist the wool industry to improve its environmental credentials through the long-term sustainable and profitable management of its riparian areas.

South Australia

This project is located in the Burra district where sheep graze predominantly native pastures (a transition zone between improved pastures and pastoral country), summers are hot and dry, channels are incised and riparian paddocks are large (up to 3000 acres). The three-year project is in its preliminary stages but will evaluate the effects of a range of management options including alternative grazing and stock watering regimes, weed control and riparian rehabilitation on pasture productivity and wool quality. At least 6–10 on-farm demonstration sites will provide the basis for the project.

The three projects, which will be completed by December 2006, will quantify the financial costs and benefits of the different management methods and provide practical guidelines for woolgrowers on how to implement them to improve both productivity and the environment. The results of each project are applicable to woolgrowers working along waterways throughout Australia. Each of these projects has a local project coordinator who lives and works in the wool growing community where the project is located.

Farmer consultation

The first step for all the projects was engaging woolgrowers and key stakeholders. Extensive consultation, determining the major concerns of woolgrowers and other stakeholders and what they hoped to achieve from being involved in the project, was conducted by each local project officer through face-to-face interviews, surveys and workshops. Investing in consultation is seen as vital to the engagement and long-term support for the project, and engaging local support will always be easier if it is considered a farmer-led, community-based project, rather than being perceived as research carried out by 'outside' interests. Listening to the farmers' individual wants and needs increases their enthusiasm, commitment and feeling of ownership for the project which is critical for its long-term success. This recognition of farmers' local knowledge, skills and experience plays a key part in developing practical management methods for riparian restoration.

Project officers: part of the community

The value of having a local project officer who lives in the local community and engages in regular social interaction with the farmers cannot be over-emphasised. A local project leader who is well engaged with existing farmer networks will help to build trust in the project. While there is a need in all areas of extension to invest in new people, a research and development program of this nature only has about five years to establish the project, achieve results, report and communicate them in the local region and the wider community. By investing in a person already well-engaged in local activities a 'flying-start' is given to a new project and personnel entering a local community. Many farmers seem to have an inherent distrust or initial suspicion of outside people and funding sources, perhaps from some perceived threat that if they accept the money it could reduce control of their farm in some way, particularly if it comes from the 'Government'. Being a local person working in the local community can overcome this barrier.

On-farm demonstration sites

The importance of on-farm demonstration sites for the new management approaches is also significant, as farmers traditionally look at their peers as a source of new information and practices. The LWW initiative is using a combination of on-farm demonstration sites and local workshops to disseminate project findings. Existing wool industry networks are being accessed so that the LWW-Rivers projects can add value to work already underway. This approach engages the communities in which the projects are being undertaken, as well as attracting people from other areas. It is an effective way of getting science into the paddock. The LWW-Rivers sub-program emphasises the need for woolgrowers to manage riparian areas as a different, but fully integrated part of their overall farm system. This means that using riparian areas for strategic grazing, shade, shelter or diversifying farm income becomes viable alternatives, rather

than the common woolgrower perception that most natural resource management programs advocate the 'locking up' of these parts of the farm. The LWW-Rivers sub-program highlights the fact that demonstration sites are on commercial woolgrowing properties that have to attain economically productive outcomes. Win-win outcomes are sought so that environmental and economic improvements can be gained on-farm.

Bridges to cross together

The woolgrower and stakeholder consultation undertaken by all three projects in the establishment phase of LWW-Rivers found that wool producers felt they had a good level of knowledge and understanding of local waterways, how they function and the factors affecting their health. The stakeholder consultation also revealed that it is important to recognise that every river and stream is special, distinctive and worth appreciating, regardless of how a scientific 'score' or 'assessment' might categorise it. Qualities such as family outings, memories, connection, contemplation, recreation and being part of the community were ranked by stakeholders as being of equal importance to wool production, stock health, disease control and irrigation. The challenge that faces programs like LWW-Rivers is how to get management changes before a crisis occurs so that we can move past words and information to implementation of science on-farm.

To meet this challenge the LWW-Rivers sub-program is developing and producing sets of information packages about the same topics but targeted to different audiences. One set for scientists and technicians and the other for woolgrowers. This is because scientific language can be a barrier to understanding of river issues. It's a learnt language. Scientific words don't convey mental pictures to woolgrowers. Woolgrowers have a rich knowledge of their landscape and the detail held within it. The landscape expresses itself as a "knowing" and has more to do with sight, sound, touch and feeling of the place. It is a more intuitive understanding. But the "knowing" and the science are talking about the same issues; we are just separated by a different language — a bridge we need to cross together.

One of the ways of 'crossing the bridge' which the Tasmanian LWW-Rivers project is developing, is using a series of oral histories to draw on the experiences of woolgrowers and their sense of belonging and empathy with riparian areas. The beauty of oral history is that it is in itself a living and dynamic process. So rather than an idea or a fact being 'learnt', it is internalised with an emotion attached to it, thereby penetrating to a different level of decision making, based on what feels right for them and their community. To 'know' rivers is to observe them closely under many different conditions, and this 'knowing' is accumulated through time, perhaps many generations. Communities are bound together by people caring about each other and the place in which they live. The welfare of our rivers is largely dependent upon the commitment of the people to the place in which they live and to each other.

Investing in people

The outcomes from the LWW-Rivers sub-program include a complete range of products including the oral histories (mentioned above), targeted brochures, 'how-to' guides for woolgrowers and extension officers based on the Rapid Appraisal of Riparian Condition and other research outcomes, as well as technical manuals and peer reviewed scientific papers. The legacy of the program, however, will be the quality of the research and its investment in the people and their communities to take the research forward and use it to empower them to learn about, value and better manage their riparian areas. By working from the premise that every stream is special, distinctive and worthy of attention, the LWW-Rivers sub-program is using information as a tool for empowering woolgrowing communities with the scientific understanding to better manage river and riparian areas.

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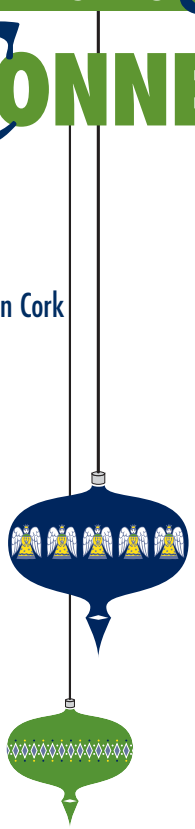
For more information about the LWW-Rivers initiative visit the website www.landwaterwool.gov.au

CONNECTING COMMUNITIES with the future

By Steven Cork



We are used to thinking about connections between people and the land. Most often the examples we use are of people from communities that are not changing rapidly and where life has, over time, become consistent with the timing of natural events. Typically, these are communities that are isolated from the modern world.

Achieving a sustainable future in the modern world is more like driving a car through unfamiliar territory on a moonless night to an unknown destination that you know you have to reach without delay. If you only rely on what you can see in your headlights then your progress will be slow (or dangerous if you try to hurry) and you will be continuously reacting to things that loom out of the darkness. Progress will be faster and safer if you do some thinking ahead of time about what might come out of the dark and prepare yourself to deal with a range of possibilities. This is the realm of Futures Thinking. It helps particularly when we face futures that we are uncertain about and have little control over. This description fits most elements of natural resource management.

Nothing connects communities with the land and with one another like a common vision of the future and some plans to achieve that vision. But how do you develop such a vision? Should it be a vision of the future you **desire**, the future that is most **likely**, the **official** future that those in authority tell you is coming, or the future of **fate**, which you will get if you just sit around waiting for the future to hit you? Those who spend their time thinking about and planning for the future argue that you should think about all of these futures.

Methods for futures analysis (often known as 'scenario planning') were developed by military strategists in World War II. They became popular among leading corporations in the late 1960s when it became clear that planning for only one future rarely worked and led to surprises that often were disastrous. The approach that was developed, notably by the Shell Corporation, involved careful consideration of past trends as well as open and unconstrained thinking about what might happen under different conditions in the future. The emphasis is not on picking the future that is most likely, but thinking through what different preparations might be needed for different futures and what could be done to prepare for a range of possibilities. The successes of Shell in being prepared for unpredicted changes in oil prices and the collapse of the Soviet Union are well publicised, but there are many other examples from the corporate world of companies that have stolen a lead on their rivals by being ready to act when surprises came along.

This style of planning for the future has been used less often in natural resource management, but where it has been used it has proven to be useful. A major advantage for communities is that a wide range of viewpoints and aspirations can be accommodated. Often differences among communities arise from different ideas about how the future might pan out. In a scenario planning approach, these different ideas can be built into different scenarios. A community can be watching for signs of different futures emerging, knowing that they are ready with ideas for how to react in each of these different worlds.

A good example is a project done recently with communities in the lakes districts in the north of Wisconsin in the USA. These communities had a lot of fun in the process and produced some lively images of a set of plausible futures for their region that involved more or less people, regulation from central government versus local control, casinos and fun parks versus eco-tourism and cultural-tourism and more or less residential and industrial development. The main thing they got from this was a common understanding of the sorts of pressures that could mould the future, as well as some ideas about how to prepare themselves to achieve the best possible outcomes under a range of future trajectories (see flash box for weblink).

Wisconsin USA Futures project, The Future of the Lakes
http://lakefutures.wisc.edu/

CONNECTING COMMUNITIES with the future

In a soon to be published study called Futures Thinking, Land & Water Australia has pulled together insights from a range of Australian and international scenarios that have major implications for communities and natural resources in Australia (see Table 1 for examples). The sorts of challenges and opportunities for Australia and Australian communities in the scenarios include:

- whether Australia embraces globalisation and becomes a leader in global governance, or falls behind as the world becomes globally wired and we react too slowly;
- the challenge for Australia to become a leader in design, manufacture, development and service of specialised products in global markets;
- whether the environment is recognised and managed as a central and valuable part of human life and the Australian economy, or is seen as secondary to economic development;
- the extent to which Australia becomes a resource-based versus knowledge-based economy;
- the extent to which Australia and the rest of the West becomes Easternised cultural and commercially (for example, we might find our industries producing new products for Asian tastes and we might do business with a greater focus on relationships than profits);
- changes in geo-political stability, trade relationships, and social cohesion in our region;
- tensions and opportunities as a new generation takes over decision making in an aging Australia;
- people's changing attitudes towards institutions including trust and optimism for a better future and willingness to take part in public-good causes; and the
- willingness of governments to take hard decisions versus pandering to all lobby groups.

Preparing for futures that might involve a wide range of combinations of these variables, will require us to think through which combinations might pose risks or opportunities that we might not be ready for. It doesn't have to be hard work — in fact it can be a lot of fun. Thinking about the future with others is a great way to 'connect communities' and an example of where this is being done in Australia is the Goulburn Broken community forum article on the following page.

Table 1: Some examples of scenarios for Australia's futures

Authors	Where to find it
Australian Chamber of Commerce and Business, 1999. Alternative Futures: Scenarios for business to the year 2015	http://www.acci.asn.au/text_files/issues_papers/Industry_Policy/IP11.pdf
Australian Business Enterprise Development Pty Ltd, 1999. Scenario Planning for the Technical Textiles Sector of the TCF&L Industries	http://www.industry.gov.au/assets/documents/itrinternet/TCFLTechnical.pdf
Cocks, D. 1999. Future Makers, Future Takers: Life in Australia 2050	Available as book only from University of NSW Press, Sydney
Harcourt, T. 2001. Scenarios and Strategies in International Business: How Austrade fared with globalisation and the 'new economy'	http://www.austrade.gov.au/corporate/layout/0,,0_S1-1_-2_-3_PWB1181552-4_-5_-6_-7_,00.html
Business Council of Australia, 2004. Aspire Australia 2025 Scenarios.	http://www.bca.com.au
Hames Group and Land & Water Australia	www.lwa.gov.au

***Source**: Futures Thinking, Land & Water Australia*

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WHAT IS THE FUTURE for the Goulburn–Broken catchment?

By Liz Chapman and Brendan Paterson

The Goulburn Valley in Victoria is a great example of a 'food bowl' if ever there was one. Think tinned fruit, dairy products, vegetables and top wines. The region relies on irrigation. If the people who live there aren't growing food, they are very possibly helping to process, transport or service it in some other way. Yet there are significant environmental issues, and the region relies on one of the oldest gravity irrigation systems in Australia that needs renewal. Where do you begin to make major structural changes so that the region is environmentally, as well as socially and economically sustainable?

> *The foundation stone for creating a sustainable future — what needs to happen before the benefits of change can be shared equitably — is a shared vision across the whole regional community.*

Connecting the community is the first step in an ambitious four year research project funded by the National Program for Sustainable Irrigation, with many partners including the Victorian State Government, Goulburn-Murray Water, and Goulburn-Broken Catchment Management Authority. The aim of the project is to work with communities-of-interest in the catchment to explore the scenarios within which the food industry may have to operate in the future. It will then formulate regional response options to deal with those scenarios. Finally, it will use the best available science and local knowledge to examine the social, economic and environmental consequences that are likely to occur if regional interests were to implement particular response options. Leadership is provided by the Victorian Department of Primary Industries Principal Scientist, Dr QJ Wang working with a research team; a Stakeholder Reference Group, and a project governance committee. All regional institutions are involved such as the Greater City of Shepparton, providing input on their own views and plans, as well as assisting with access to community networks.

The project seeks to engage with a population of around 183,000 made up of men and women, young and old, and including a comparatively high proportion of indigenous Australians and a diverse multi-cultural mix. Try talking about future scenarios around the dinner table and you will start to understand the diversity of views and levels of interest! The project has used media and Community Forums to achieve awareness and participation. It has been front page news and enjoys a positive profile. Everyone who wants to have input at any level is invited to email, write, telephone, or attend a Community Forum in their district. Each Community Forum consists of four day-long sessions — and the return rate has been exceptional. In fact, participants have asked for more!

To date, the Community Forums have been run in five locations across the region, with the

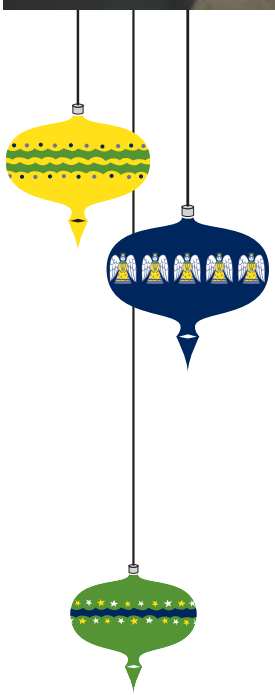
The Goulburn–Broken Catchment covers an area of 2.6 million hectares of which:

- 520,000 hectares is the Shepparton Irrigation Region of which approximately 280,000 hectares is irrigated
- 1,100,000 hectares is dryland riverine plains and hill country
- 47,000 hectares is water bodies
- 414,300 hectares is State Forests, including Barmah, the largest Red Gum Forest in the world
- 95,827 hectares urban
- 4,228 hectares is alpine resort

The catchment also contains Lake Eildon, Victoria's most important water storage, with a capacity of 3,375,000 ML.

WHAT IS THE FUTURE for the Goulburn–Broken catchment?

Principal Investigator QJ Wang (second from left) chats with Denis Moon, Peter Gibson and Della Palmer at the Community Forum held in Echuca.



sixth just commencing. Over 100 people have attended with a continuation rate of between 70–90%. The Community Forums have generated a wealth of information, with four workshops used to focus on different issues:

Workshop one looked at aspirations for the future, and the results centred on:

~ achieving prosperity with balance,
~ enhancing productivity through innovation and diversity,
~ valuing and improving our environment,
~ maintaining vibrant communities,
~ creating opportunities for young people and new farmers,
~ community leadership and the ability to manage change,
~ new and improved water management systems,
~ associated research & development, and
~ valuing food production practices and farmers as stewards of the resource.

In workshop two, participants were required to:

~ identify the range of external drivers (i.e. issues over which we have limited control) which were operative in the past,
~ choose 4–5 external drivers likely to be most relevant to the future, and
~ work in small groups of 4–6 and use those drivers (with a credible story-line) to develop a plausible scenario for the next 30 years.

Part of the feedback process was to identify "gaps" in the list of drivers considered and the scenarios developed, that needed further attention.

In workshop three, participants identified the:

~ internal drivers (i.e. issues over which we have control) that were operative in the past,
~ strengths and weaknesses of the catchment at the moment, and
~ threats and opportunities presented by one of the Scenarios from Workshop 2, that they wished to pursue further.

Then, working in small groups of 4–6, the task was to develop a range of options by which the catchment community could respond to the chosen scenario, taking into account the strengths and weaknesses, threats and opportunities identified throughout the workshops.

Finally, participants are asked to put some structure into their list of response options, by grouping them into "packages" of related actions. In Workshop 4, participants are developing broad goals into a more detailed set of actions.

An analysis of workshop participation has demonstrated that those who took part were predominantly dairy farmers, dairy processors, fruit, vegetable and grape growers, Landcarers, financial advisors, local government, rural counsellors and agency staff. The project team feels that the participation of women, young people and indigenous Australians has not been adequately achieved through the workshop process. As a result:

~ work with women's groups has commenced,
~ additional input from students at Dookie (University of Melbourne Agricultural College) and via the Young Irrigation Network is planned,
~ discussion has commenced with the Ethnic Council in Shepparton aimed at working with community groups from non-English speaking backgrounds,
~ at a meeting with a number of Aboriginal leaders to discuss the project, the need for foundation work such as a land and water management platform was highlighted, and
~ interviews with business leaders and visionaries are being conducted.

The work of engaging with the many different communities-of-interest will continue for some time — backwards and forwards as the project continues to gain solid community engagement. The Stakeholder Reference Committee will then select a range of scenarios and options for further investigation.

WHAT IS THE FUTURE for the Goulburn–Broken catchment?

A Technical Working Group will be formed to consider the various response options in detail. This Group will be made up of researchers, technical specialists and practical experts from a wide range of fields and industries. They will help to further develop the necessary detail within the scenarios and response options. This is being done to ensure that the subsequent assessment of the consequences of implementing a given response option is as realistic as possible. Those consequences may be expressed in terms of outcome measures that we currently use, such as — water quality and ecology, salinity, soil health, industry economic indicators, population and social equity etc. In addition, the Technical Working Group may develop new measures to represent the impacts of change. The results of their work will be presented back to the Stakeholder Reference Committee for approval, and to the various communities-of-interest for discussion. The media will be an important mechanism to keep the general population well informed, and the 'net' will continue to be cast to encourage submissions and participation.

Once the various response options have been developed and described, a new round of Forums will be held to develop understanding within the community of the consequences produced if a given option were to be implemented. Ultimately, these Forums will seek to develop consensus for the preferred options for the future of irrigation within the region, and regional follow-up of those actions that are required to effectively build leverage towards achieving those preferred options.

There are many people watching the Goulburn–Broken Irrigation Futures Project and its attempt to genuinely engage with local communities. It is hoped that the process will provide options to secure environmental, social and economic future of the Goulburn–Broken region. So far, so good.

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NATIONAL PROGRAM FOR
Sustainable Irrigation

www.npsi.gov.au

New South Wales: Irrigation — addressing challenges to sustainability

The National Program for Sustainable Irrigation has funded a project to improve the level of adoption of ecological risk assessment and risk management methods in the Australian irrigation industry and in regulatory agencies. The project is titled *Delivering Sustainability through Risk Management*. Research teams from Monash University and the University of Melbourne are undertaking regional awareness workshops, case study partnerships, and working with other Sustainable Irrigation Program projects.

One of the case studies is in southern NSW around Deniliquin, and the case study partners are Murray Irrigation Ltd and the NSW Department of Environment & Conservation (formerly the NSW EPA), the NSW Department of Infrastructure, Planning and Natural Resources and the Murray Catchment Management Authority In the case study area, Murray Irrigation provides irrigation water to over 2400 farms in southern NSW. Its area of operation stretches from Mulwala in the east, to Moulamein in the west — over 716,000 hectares of farmland north of the Murray River.

The project sought views on risks from a wide range of interests, including conservation, indigenous, irrigator and industry groups, as well as regulatory and research agencies. This was done using one-on-one interviews and a stakeholder workshop. The one-on-one interviews proved to be a highly successful approach in engaging community stakeholders. This process prioritised environmental values in the region, and identified the threats or hazards that threatened these values. Environmental values across stakeholder groups were generally consistent; however, different stakeholder groups had different perceptions about which values in the area were in decline, and what the threats were to these values. The outcomes of this problem formulation phase were then used to formulate a risk analysis plan for the case study.

The risk analysis plan will develop two models, the first a wetland model for management of Black Box wetland communities, and the second a river health model for management of native fish and their habitats. Both the wetland and native fish models will be used to test the outcomes of a range of risk management scenarios and provide the basis upon which an adaptive environmental management framework will be established to assist future decision-making. The models will also be used to assess each of the threats to Black Box wetlands and native fish communities, and quantitatively identify the priority risks to values. On completion of the study, results will be communicated back to stakeholders. The project will be completed in June 2005.

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Western Australia: Unlocking remarkable change

More than 40 per cent of Perth's milk supply comes from the Harvey Irrigation Area. A project funded by the National Program for Sustainable Irrigation relies on an excellent partnership approach across local commerce and industry, as well as government agencies. This connected community is learning about technology and management practices on-farm that will minimise environmental impacts and optimise the performance of sprinkler and surface irrigation of dairy pasture. More than this, it has already demonstrated the energy efficiencies and overall energy balance of a pressurised gravity-fed piped system of irrigation water delivery. The project is providing data on the water delivery, pressure and energy requirements for dairy farmers to successfully operate centre pivots of varying sizes.

A key achievement of this stakeholder initiated project is its drive to seek further connections and links both within the Harvey Irrigation Area and outside. This includes its communication, education and learning activities involving

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other irrigators and an interested audience Australia-wide that has been promoted through articles, presentations, interviews and workshops. These networks bring new knowledge and perspectives on opportunities and change.

The project partners have achieved exciting water management, pasture production and environmental results this year and are confident about further major improvements in the 2004–05 irrigation season. The results to date have been achieved because of committed and enthusiastic people, networks and connections with communities of interest. Relationship building and management, backed by knowledge and technology is the key to unlocking remarkable change.

The project has featured in the Commonwealth's Innovation in Agriculture Showcase in October this year, and has also been selected as a finalist in the Western Australian Premier's Water Foundation Water Conservation and Management Awards which are part of the SGIO 2004 Western Australian Environmental Awards to be announced in November 2004.

ENVIRONMENTAL WATER ALLOCATION PROGRAM

The Environmental Water Allocation Program is a new program within the Land & Water Australia Rivers Arena. It will provide research that demonstrates and improves the benefits of water allocated for environmental purposes. This research is particularly important in Australia at present because of the need to provide better targeted environmental flows in the face of increasing water shortages because of increasing consumptive demand and continuing drought.

The Program has a budget of $3 million over five years. The work program will be based on four main themes:

1. Developing the ability to achieve the benefits of environmental allocations to be made for the River Murray and other stressed rivers.
2. Understanding the flow needs and the management of environmental water in less well understood aquatic ecosystems across Australia.
3. Developing holistic water budgets of complete river systems that encapsulate the current temporal and spatial patterns of water distribution in regional catchments and the probable changes to water availability with future land use and climate change.
4. Promoting the economic, social and institutional aspects of water reform aimed at more sustainable use of water in rural Australia in the future.

The Program aims to work with other R&D funding sources to maximise the benefits from R&D into environmental flows. The program will also seek to fund R&D that has management driven outcomes and is strongly supported by management agencies, catchment authorities or community groups.

For further information

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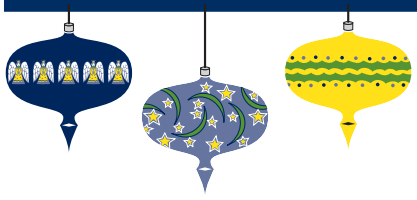
Welcome

Richard Davis is the Coordinator for the Environmental Water Allocation Program. He has had extensive experience in R&D management with CSIRO Land and Water, most recently as leader of its Urban and Rural Water Management Program. For the past two years he has worked on international water resource management, where the issue of environmental water allocation was particularly pertinent because of its importance for sustaining people's livelihoods. He has a particular interest in promoting research that provides quantitative information on ecosystem response to different flows and contributes to greater acceptance of the benefits of environmental flows.



It's a WRAP

News from around Australia's States and Territories

Australian Capital Territory

by Tom Baker and Lynton Bond

'Along the Molonglo' — bringing together art and catchment management

The Molonglo Catchment Group, based on the catchment of the Molonglo River system in the Australian Capital Territory and adjoining New South Wales, is using art to take natural resource issues to the community. One of its innovative projects is holding an Art exhibition in association with the Queanbeyan Arts Society in mid 2005. The aim of the exhibition and competition, based on the theme 'Along the Molonglo', is to use creative art to express and promote the cultural, heritage, natural features and essential character of the greater Molonglo River catchment. It is hoped that the exhibition will increase community awareness and enable a wider audience to identify with the rich cultural and natural landscape of the Molonglo, and the need for this to be well managed as the basis for future sustainability.

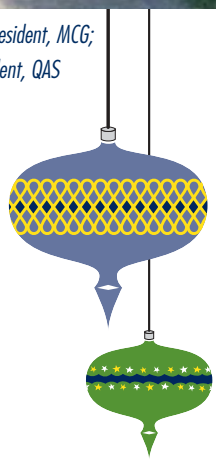
The organising committee of the art exhibition and competition is intending to make this a high profile event, attracting significant prizes for the three best judged overall paintings and drawings on the 'Along the Molonglo' theme. Readymix Quarry, Canberra International Airport and the ANZ Bank have kindly agreed to support the competition by sponsoring prizes.

The idea behind the art exhibition was as a result of the Molonglo Group exploring new avenues for building community capacity in natural resources management. Radio, film, art are all being used to establish partnerships with groups such as the energetic Queanbeyan Arts Society, to create and project images of the catchment to a wider audience. Other groups that are getting involved include the ACT Artists Group, and the ACT and Region Catchment and Landcare Association, that is interested in investigating the potential for film as a medium for generating interest and knowledge of the environment, and key issues such as water. Radio Landcare has now been operating in the catchment for three years on 2XX FM 98.3 Community Radio and Queanbeyan FM 96.7 Community Radio.

The 'Along the Molonglo' Exhibition will be held in the Queanbeyan Art Centre Gallery, Trinculo Place, on the banks of the Queanbeyan River from 1 July 2005.

The Molonglo Catchment Group is an umbrella landcare support group established in December 2003 to develop a natural resources plan to guide the stakeholders in the catchment to contribute to the implementation of long term specific targets set out in the Murrumbidgee Catchment Blueprint. The catchment includes all the tributaries running to Lake Burley Griffin and the Molonglo and encompasses a wide variety of urban and rural landscapes and cultural activities and environmental assets.

From left: Lynton Bond, President, Molonglo Catchment Group (MCG); Tom Baker, Vice President, MCG; Jean Helmers, Gallery Manager, Queanbeyan Art Society (QAS); Jack Sullivan, Vice President, QAS in front of the Queanbeyan Art Gallery, on the banks of the Queanbeyan River.



For further information

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New South Wales

by Belinda Hodges, Karenne Jurd, Louise Ormerod, Su Morley

Owning a sense of place — reconnecting creeks and communities

In Newcastle, where most of the city's catchments have been extensively modified through urbanisation, the impacts of urban stormwater pollution are well documented and typical of urban stormwater stories across Australia. Yet, even with an industrial history, Newcastle still retains waterways worthy of protection. There are approximately 150 kilometres of 'natural' creeks remaining in the City draining to internationally significant wetlands and estuarine ecosystems. The challenge for natural resource managers is protecting these environments in a long-term sustainable way; a way that recognises that people are not only part of the problem — they are also the best part of the solution.

However, living in highly modified urban and suburban spaces has caused people to become disconnected from their natural environment. This, to some extent, explains common polluting and destructive behaviours. While mass media communications have had some effect in raising environmental awareness, it does not necessarily mean that positive change behaviour will automatically follow. In order to achieve sustainable outcomes, a valuable first step can be the effective engagement of residents with the natural fabric of their local waterways. Newcastle City Council, in partnership with the (former) NSW Environment Protection Authority and other local agencies, has trialled several methodologies based on this premise.

The following projects from the Newcastle City Council's Urban Water Cycle Program have aimed to deliver a sense of ownership and control in natural resource management back to the community. The approach has focused on community engagement tools that deliver at a one-on-one, neighbourhood scale; a scale that enables locally meaningful dialogue that ideally fosters sustained community connections to local waterways.

The community launch of Lambton Ker-rai Creek's name.

The Lambton Ker-rai (Creek) — *recognising a creek*

The Lambton Ker-rai is a highly modified open channel running through a park and playing fields on a former swamp. The sub-catchment was initially identified as a pollution 'hot-spot' and hence the focus of an EPA funded stormwater awareness campaign. As part of a wider suite of structural stormwater street treatments and schools/business liaison, Council supported a community-run "creek-naming" process for the unnamed waterway. This process eventually saw a name — Lambton Ker-rai (local Awabakal for 'stream') chosen by the community. As a result of this initiative, project community surveys revealed a shift from 17% to 73% of the local community recognising that they had a creek in their area. This was an important building block to fostering community protection of the creek.

...a valuable first step can be the effective engagement of residents with the natural fabric of their local waterways...

Beyond simply recognising the creek, the naming of Lambton Ker-rai has created community aspirations for its improvement. The creek naming committee is now involved in the development of a plan to rehabilitate the creek. In addition, poor water quality and habitat findings by local Lambton High School's regular monitoring at the creek have spurred students into action. The students have developed their own award winning* communications project to support creek health and the new creek design. This is an example of the kind of ownership of local waterways that fosters sustainable protection.

* Lambton High School came first in both state and national rounds of Ryebuck Media's 'Pathways to Innovation — the Water Challenge' 2004

'Gutter Talk' — *building neighbourhood relations*

'Gutter Talk' is a tool that has been used in Lambton and several other targeted catchments to enable direct contact with residents over a 'cup of tea' to discuss stormwater and local waters issues in a fun, approachable way. Enticed by the offer of a free broom, residents come along to find Council staff set up on their street corner with comical stormwater artworks, gutter sweeping demonstrations and short talks on "what you can do in your home" to improve the health of the local creek/beach/wetlands. Repeated surveys suggest that Council's presence and availability across a neighbourhood in this was has generated greater trust between Council and the community and has triggered positive stormwater change behaviour.

Water bug surveys as a creeks engagement tool

Pledging to keep gutters clean at Gutter Talk.

Rebecca Borwell of Lambton High with their community flyer.

A new Community Forum is formed at Warabrook

Warabrook Wetlands Project — *forums for environmental outcomes*

After winning (former) NSW EPA funding to run a wetlands engagement program in Warabrook, Newcastle City Council began the project only to find a high level of conflict in the community over local tree planting projects and other issues. No existing community group existed to work through these issues, let alone to get involved in a community engagement project for the local wetlands. A Council facilitated Community Forum was initiated to enable the community to address the social needs of the area as an essential building block for sustainable outcomes for the wetland project.

After a successful project, the Warabrook Forum now continues to meet regularly to deal with all manner of community issues, including a regular item on the agenda for the local environmental action group to discuss its plans.

Newcastle City Council's Urban Water Cycle Program post-project evaluations have consistently found that a percentage of the community will change their behaviours as a result of effective engagement interventions. We are seeing more people within the community willing to take on an active role in the care of their special, local waterways. The challenge now is to continue to foster these new relationships, whilst maintaining the old, to nurture the community connections essential in making local waterways protection sustainable.

For further information about Newcastle City Council's Urban Water Cycle Program: visit www.newcastle.nsw.gov.au/go/water

or contact

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Water Bug Surveys — *connecting to creek life*

The bi-annual Water Bug Survey, as part of the Newcastle 'Creeks Alive' project, is another engagement tool that enables community relationships to be built, along with the opportunity to reconnect people with their local creek. Amidst the dip netting and looking down the microscope, polluting behaviours are discussed with creek neighbours in a way that relates to direct impacts on the newly discovered life within their creek. The data collected with the community is to be used with other parameters, to provide health 'report cards' for the City's waterways to take the message further.

Water Bug surveys as a creek engagement tool.

Connecting Indigenous and Western ways of 'knowing' country

Nearly one third of pastoral leases in the East Kimberley are now controlled by Aboriginal people, and there is an emerging need to support land management with locally specific programs. Despite the fact that Aboriginal people constitute more than a third of the East Kimberley population and control about a third of pastoral lands, they remain marginalised in economic and natural resource planning, management and decision-making. Land & Water Australia is supporting the development of a project that allows Aboriginal people and local natural resource management (NRM) staff to jointly develop and participate in locally driven research to enhance collective capacity for effective land management. The aim of the project is to identify options for implementing environmentally, culturally and economically sustainable NRM outcomes at the property scale in the East Kimberley, with a particular emphasis on indigenous pastoral lands. The project will also identify institutional and policy impediments to, and opportunities for, developing sustainable NRM pastoral management practices in the East Kimberley, and more generally in northern Australia.

Photo above right: Doug Powers (up the tree) collecting plant samples for vegetation mapping with Noel Schoknecht and Alan Payne.

Working together more effectively

The 'over-consultation' of Aboriginal people is often identified as an issue in NRM, especially when the capacity for involvement can be minimal and social capital limited; a common issue in small family-based communities. Building partnerships between organisations assists in better integrating the delivery of support to Aboriginal people and also provides an opportunity for meaningful exchange of skills and knowledge amongst local Agency staff.

This project will use a participatory research model to ensure that research outcomes are embedded within communities by building local capacities, whilst knowledge is adopted through participation. Involving people from a 'grass-roots' level at all stages of the project will ensure that the aspirations of local Aboriginal people and their land management issues drive the research. This approach will truly engage with people on their country in a culturally appropriate way. Fostering local ownership of activities will maximise the chance of meaningful and willing involvement and, importantly, the adoption of results. Four properties are being developed as potential case studies for the project. Some of these are indigenous owned, and those that are not have some sort of interface between indigenous people and land management issues and approaches.

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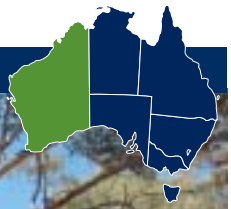
The East Kimberley Pastoral and Cultural Development Project aims to explore innovative land management approaches and diversification options on pastoral lands in the East Kimberley. The Kimberley Land Council (KLC) and the Department of Agriculture, Western Australia (DAWA) are working collaboratively to develop this project with support from the Tropical Savannas CRC and the Indigenous Land Corporation, funded primarily through LWA's research and development programme. A local partnership between the KLC and DAWA will maximise the skills and experience of two very different organisations, bringing together expertise in indigenous participation and resource management to achieve more successful outcomes on the ground.

Hilly country at Bow River



Left: Boabs at Bow River Station. Above: Snappy gum on granite hills at Bow River.

Building a bridge towards Bow River — a case study

One of the case studies for the project is the community that lives along the Bow River. The Bow River courses a life-line through the rugged, granite hill systems of the Kija people's country. The Juwulinypany community is situated on the bank of the Bow River and in 'whitefella' terms is located within the boundary of the Bow River pastoral lease, which the community has possession of. The community is made up of recognised traditional owners of that country, relatives and associated people. Culture is strong in these people and they are still very connected with their country and traditional ways. Over the years, varying numbers of cattle have been run on the more pastorally productive parts of the property as a small pastoral enterprise. The people living on the property strive to maintain traditional activities such as hunting, fishing and gathering bush foods, and there is active engagement between generations to transfer knowledge and culture.

The people at Juwulinypany community want to keep culture strong, and retaining responsibility for their traditional country is vital to this. This project hopes to bring together information from the local Bow River community with Western and other Indigenous knowledge streams so that an integrated and culturally sensitive approach to land management can be developed. Common land management issues in the region such as uncontrolled fire regimes, weeds, erosion and grazing effects will be tackled by combining indigenous and western knowledge. The people at Bow River hope to integrate some of their local traditional knowledge of the property with some of the non-traditional data and methods that government can provide to better manage fire and grazing issues. Using this approach, the senior people have an opportunity to transfer, and possibly record, some of their cultural knowledge to the younger people, whilst also embedding this in non-traditional approaches to land management.

This project is acknowledging that different knowledge systems lead to different management approaches, and by working together we can grow our collective capacity to sustainably manage country.

Kids at Juwulinypany community.

by Andrea Wilson, Amy Jansen, Allan Curtis and Alistar Robertson

Connecting with communities by understanding landholder management of riparian zones in the Goulburn–Broken catchment

Riparian zones perform essential ecological functions and are important regional sites supporting high levels of biodiversity. At the same time, human settlement has always been focused on rivers, and human activity is often a major determinant of riparian structure and function. A large proportion of riparian land in Australia is owned or managed by private landholders, and grazing by domestic livestock has been a major land use in these areas. The grazing and trampling activity of domestic livestock can have a significant influence on riparian habitats. The aim of this study was to improve our understanding of the impediments to landholders' adoption of recommended management practices to improve riparian condition, such as excluding stock, providing off-river watering points and using crash grazing techniques.

Our study was undertaken in the Goulburn Broken Catchment of north east Victoria, an area that encompasses the Goulburn River and Broken River catchments. Thirty-three property managers were visited in October 2002. Each farm visit included an interview that investigated the attitudes of landholders and their riparian zone management practices, including farm size, predominant land-use, stocking rates, revegetation practices and fencing or grazing exclusion.

The assessment of riparian zones at each site was undertaken using the Rapid Appraisal of Riparian Condition index developed by Jansen et al. (2004). Each sample site was a 200 metre section of the riparian zone that landholders had identified as representative of the river frontage on their property. The parameters scored at each site included river width and width of the riparian vegetation, number of vegetation layers, percentage cover of native species in each vegetation layer, leaf litter cover on the ground and grazing damage to any regenerating canopy species. Potential scores ranged from 0 (worst condition) to 50 (best condition). Total condition scores were grouped into five categories: very poor condition <25, poor condition 25–29, average condition 30–34, good condition 35–39, and excellent condition 40–50.

Key findings

Generally, the riparian zones of the investigated private properties were in poor to very poor ecological condition (Figure 1). This was mainly due to the widespread occurrence of exotic species such as blackberry, the lack of coarse woody debris, and low vegetation regeneration at many sites. Seven 'Public Land' sites (e.g. State Forests and Reserves) were also included in the riparian assessments as a comparison to private riparian zones. Although a number of these sites scored within the 'Excellent' category, no sites scored near the theoretical maximum (50) for the index.

The majority of participants in this survey had adopted fencing and tree planting on some portion of the riparian zones on their properties (Figure 2), but very few were implementing recommended grazing techniques, such as crash grazing. The time and cost associated with fencing and maintenance of riparian zones were often cited as impediments to adoption of recommended riparian land management practices (Table 1). However, other issues, such as the loss of fences during flooding, were also raised by landholders.

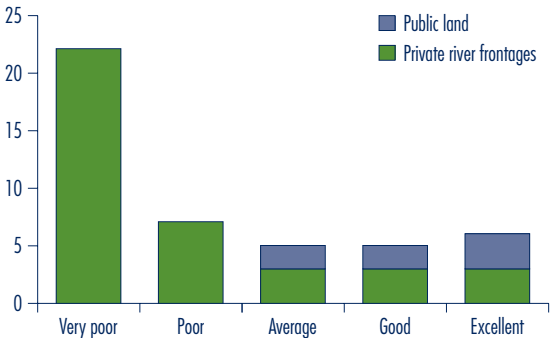


***Figure 1**. Frequency distribution of sites in riparian condition categories (n=45).*

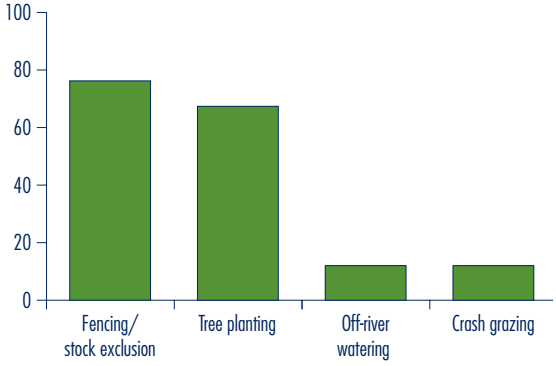


***Figure 2**. Percentage of the 33 landholders who had adopted recommended riparian improvement practices.*

References

Curtis, A., Robertson, A. & Tennant, W. 2001, *Understanding landholder willingness and capacity to improve the management of river frontages in the Goulburn Broken Catchment*, The Johnstone Centre, Charles Sturt University, Albury.

Jansen, A., Robertson, A., Thompson, L. & Wilson, A. 2004, 'Development and application of a method for the rapid appraisal of riparian condition', *River Management Technical Guideline No. 4*, Land & Water Australia, Canberra.

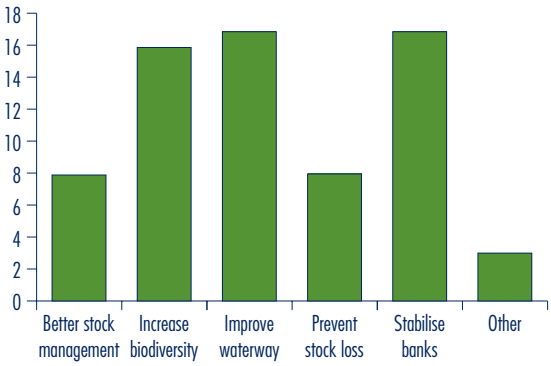


***Figure 3**. Frequency of reasons for adopting riparian management practices at fenced/ungrazed sites (n=25). Bars represent the number of landholders that agreed with each of the nominated reasons.*

A large proportion of landholders identified environmental rather than economic reasons for adopting improved land management practices. For example, fencing for increasing biodiversity was seen as more important than improving stock management (Figure 3). Other reasons cited for undertaking fencing included salinity management and vegetation connectivity.

Management implications

Maintenance activities, such as weed control, were often discussed by landholders as an important, but frequently ignored consideration when fencing off riparian zones on their properties. For several landholders with existing riparian fencing or revegetation, the continued maintenance associated with these initiatives was cited as an unforeseen and discouraging aspect. In a number of cases, landholders expressed reluctance to undertake further fencing or encourage others to do so because of the difficulties associated with maintaining rehabilitated areas. As a result of these findings, it is recommended that greater consideration be given in funding initiatives to the maintenance of established rehabilitation areas in riparian zones to preserve the goodwill and enthusiasm of participating landholders. Other impediments to adoption of recommended practices for riparian improvements included time, cost, and the loss of resources such as access to permanent water or quality grazing areas. These difficulties are easily addressed via funding solutions, and a number of landholders indicated that access to funding would facilitate adoption.

Management practice	Cost	Time	Floods destroy fence	Want access to reliable water	Want access to feed	Practice is not necessary	Other
Fencing	23%	8%	23%	23%	15%	8%	–
Revegetating	23%	15%	–	–	23%	31%	8%
Crash grazing	–	–	–	–	62%	38%	–
Off-river water	31%	8%	–	61%	–	–	–

***Table 1**. Impediments to the adoption of recommended riparian management practices at grazed sites.*

Results from our assessments demonstrated that a large proportion of riparian zones were in very poor ecological condition, but the response of land managers to our interview questions showed some respondents believed that improved riparian management was not necessary. This is consistent with data collected in the Goulburn Broken Catchment by Curtis et al. (2001) which demonstrated that a substantial minority of land managers were either misinformed, or reluctant to acknowledge the critical role of stock grazing and clearing in contributing to riparian degradation. Therefore, we suggest that community education programs may be useful in increasing adoption rates of recommended riparian management practices by promoting awareness of the need for improved riparian condition.

This study highlights the need for education, awareness and incentives packages to be 'tuned' in to the context within which landholders operate, otherwise they are likely to fall short of achieving on-ground change.

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Technical Guideline no. 4 is available from CanPrint Communications on 1800 776 616 — quoting product no. PR040656

Splash! — a community celebration of the Sunshine Coast waterways

Once every two years, Chambers Island, in the Maroochy River Sunshine Coast, is transformed into a festive paradise. The Sunshine Coast community comes together to celebrate the waterways and the catchment we live in and adore. More than 1200 people attended in 2004.

Maroochy Waterwatch and the *Splash!* team put together an event that is more than a festival, it is an artistic, ritual celebration, for National Waterweek. *Splash!* is held on Chambers Island, a tiny estuarine island, away from the hustle and bustle, yet close enough to be accessible… by walking bridge or boat. It is a place for relaxation, days off, fishing and swimming, AND it is a perfect open stage for an outdoor-little-bit-unusual performance event.

Splash! chapters are created in partnership by communities all over the Sunshine Coast. There are workshops each week to create chapters of a greater story. On the event day there are food vans, workshops, performances, displays, a performing circle and decorations transforming the island. The local Gubbi-Gubbi are involved, the descendants of the South Sea Islanders, kids, grannies, potters, dancers professionals, artists, musos, youth, elders, visitors.

This year just before dusk, the big brassy O'Pa band led a parade across the bridge, and a most wondrous performance journey ensued. The children performers were a treat. They led with the froggy footprints, and we followed on a mystical, spiritual, magical journey. The parade signals the beginning of a roving performance that took us around the island. This year we began with a mystery… and the only clue was to … *follow the footprints of the frog*.

Footprints; where we go, what we leave behind. The frog; an environmental indicator. Follow, learn, look, watch, follow the lead, connect people, land and water, what message do we receive?

The *Splash!* story this year flowed from there. The 2004 story culminated in a Butterfly Ball, featuring a huge puppet of the endangered Birdwing Butterfly.

The finale performance was backed by glittering skopske screens and shadow puppet windows, created by artists and International Volunteers for Peace. Chapter after chapter of wonderland ensued: Gubbi Gubbi welcome and dance, dreamtime slides of waterscapes projected onto white robed girls and gently waving chiffon cloth, kid frogs, huge giant animal puppets, ultraviolet musical frogs, butterflies, butterflies, flutterbys everywhere. And the final word — a beautiful poem by Glen Sheppard encapsulating the whole mood and the message of reconciliation, accompanied by reconciliatory collaboration in action — the music of local Lyndon Davis on didge and Linsey Pollak on his own instrument saxillo.

Flowtown at Splash! 2004, photo by Steve Swayne.

Ultraviolet musicians at Splash! 2004, photo by Steve Swayne.

Cascade Tree frog and Birdwing Butterfly at Splash! 2004, photo by Steve Swayne.

Making connections beyond Australian waters, this year *Splash!* hosted ten International Volunteers for Peace

In the spirit of act local, think global, Splash! instigated a partnership with a worldwide network International Volunteers for Peace. The volunteers from Australia, Belgium, France, Italy, Germany, Ireland, UK and Korea and ranging in age from 18–35, worked with Splash! artists alongside members of the local community.

Wacky Music

Highlights were many and began with the musical score, every moment expertly filled with a musical treasure. Parade music, gentle music, stimulating; special, exciting and new, collaborative, heart-warming. Created in community workshops with internationally renowned Linsey Pollak, this was no ordinary water music. Alongside a gypsy brass band, a marimba band and other funky stuff, Linsey created music by slapping water, squirting water, triggering water, and ultra-violet effects. This was a unique opportunity for community groups to work with of the Sunshine Coast's most silly (his word!) and innovative composer/musician.

Each Splash! features a ritual to honour the local waterways and the volunteers who do the work to rehabilitate, preserve and protect them. *The Pouring of the Waters Ceremony* is the poignant heart of Splash! Our local Mayor amongst many others, was there to pour water and feel the sacredness of the space created by a sound bath and waterpots highlighting the preciousness of water. This ceremony again proved to be very moving as each participant held aloft a jar of water and declaimed its place of origin.

It was a privilege to be a part of this extraordinary community collaboration, an event which has heart, which is so much greater than the sum of the parts, which speaks such strong messages to all, which has captured the essence of connectivity of land, water and people. It is this lasting message that I take with me, that *we are all, like the waterways, connected*, and everything we do makes a difference.

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Splash! is an initiative of Maroochy Waterwatch. Susie Chapman shares her views overleaf about the value Waterwatch can bring in connecting communities…

Waterwatch — it makes perfect sense

When I started co-ordinating Maroochy Waterwatch on Queensland's Sunshine Coast in 1996, I knew there was something intrinsically right about Waterwatch. It has kept me entranced ever since, and I now realise that rightness is even more pronounced in the current climate of regional natural resources management.

In Maroochy there is a complex tributary system with 2784 kilometres of stream length in one relatively small catchment area of 632 km^2. The settlement pattern is dense and getting rapidly denser by the day being one of the fastest growing shires in Australia. What this means is that the water touches the lives of most of the population with a gully down the backyard, the river or estuary nearby. This provides a wonderful opportunity for the community to connect to the landscape, and to each other through the landscape. When the population growth and infrastructure development is rapidly altering our reference points, it is even more important to keep our landscape bearings, and our community cohesion.

Waterwatch can, and has achieved a great deal in this regard. The extensive adult and school network of community monitors form the core of a very vibrant community movement to objectively observe the processes of the waterways and detect and report change. They form an early warning system, a first line of defence. With so many small streams, the potential for diffuse pollution is vast and the enfolding landscape hides a multitude of sins.

This objective surveillance from broad community is essential, yet it is conducted in a way that invites participation in the solution through understanding, not sending offenders back into their corners. This is the prevailing ethic of Waterwatch across Australia. Despite the name, Waterwatch is not a *watchdog* organisation but a community movement from monitoring to action. It is based squarely on principles of social justice, that everyone has an important and valid role to play in the catchment story. And it fosters positive collaborative action that is well based on protracted and objective observation.

With the regional plans being finalised and implemented across Australia, we are all starting to use the same language and timelines when setting targets: aspirational targets (20–50 years); resource condition targets or landscape changes (10–20 years) and management action targets (1–5 years). To track performance of the regional bodies in their implementation, it is the short term management action targets that must be measured for reporting on the finer scale of action. This is where a good Waterwatch program is essential, as the resources simply do not exist in most cases for agencies to measure at this level on a regular basis.

There is also the fabulous capacity and companionship of the groups that grows if nurtured. In South-East Queensland, NHT1 culminated in the establishment of the South-East Queensland Waterwatch Network and their prospectus, a demonstration of the extraordinary energy, dedication and good will of all the 13 Waterwatch networks. Such a positive and broad-based movement surely has a significant place in the brave new world of regional natural resource management.

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The 4th National Waterwatch Conference

Navigating the Rapids

The Waterwatch Conference is a national event for everyone across Australia involved in community water monitoring, on-ground river health actions or water health education and awareness raising activities. The conference will offer professional development opportunities, and provide an opportunity for participants to share their knowledge and experiences.

The conference aims to provide a forum to promote and advance community involvement in sustainable water management. The theme of the 4th National Waterwatch Conference in 2005 is 'Navigating the Rapids' — which will focus on the challenges of integrating community water monitoring activities into the Natural Resource Management regional delivery model.

The National Waterwatch Conference 'Navigating the Rapids' will be held at the University of Melbourne, Parkville Campus from the 7th to the 10th of February 2005.

Communities caring for catchments. Dorset Waterwatch monitoring to action in Tasmania

Dorset Waterwatch is a grass-roots level volunteer group that has been working towards improved water quality and biodiversity protection in the Dorset municipality for ten years. The group runs focused community education programs, and a widespread monitoring network contributing valuable data to local, regional and state-wide knowledge of water quality. Dorset Waterwatch is an excellent example of the success of the Waterwatch ethos inspiring community passion and participation in natural resource management.

Members of the network regularly monitor water quality at 48 sites across the municipality, usually on a monthly basis. Monitoring of soluble phosphate, turbidity, electrical conductivity and temperature are carried out in accordance with a Quality Assurance/Quality Control program as outlined in the Waterwatch Tasmania Reference Manual to ensure the credibility and usefulness of data. As examples of this, conductivity meters and other equipment are calibrated regularly and set methodologies for sampling and recording water quality results are followed. Data is entered onto an Access database provided by Waterwatch Australia and funded through the Natural Heritage Trust. The data obtained has been used to generate a report on water quality for the municipality. The report has been provided to members and volunteers and included in the Dorset Natural Resource Management Strategy. Findings from the report have also been published in the local newspaper. Some of the findings of that report are that the Brid River sub-catchment is the most affected by elevated turbidity levels and that, during periods of heavy rainfall, the Ringarooma River carries a very high load of sediment. Data has been made available for State of the Rivers Reports for three rivers: the Brid, the Great Forester and the Ringarooma; for a National Salinity Audit and for the State water quality database. Waterwatch volunteers have also made observations of riparian habitat (including litter) as well as populations of aquatic macroinvertebrates, frogs, burrowing crayfish, lobsters and fish.

Community education

The community monitoring network has highlighted issues of water quality or biodiversity. Strategic planning, incorporated into the group's general meetings, has included the choice of a major focus for a community education campaign, based on one of these issues. The campaign raises public awareness of water and land quality issues and promotes best practices to maintain and enhance our valuable natural assets. Some examples of this are a Save Our Soil campaign to educate landowners to conserve precious top soil and reduce the amount of sediment entering waterways; a 'Phoswatch'

For more information on how to register for this conference or how to submit an abstract for presentation, please visit www.waterwatch.org.au

Contact

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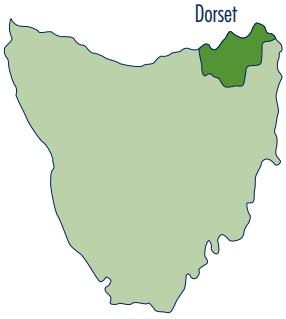
The Dorset Municipality covers the northeast corner of Tasmania. It is a predominantly rural area with a population of about 7000 and townships at Scottsdale, Bridport, Gladstone, Ringarooma, Derby and Branxholm. The major industries are agriculture, forestry and fisheries, with a declining manufacturing sector and a small service sector dominated by retail.



The giant fresh water lobster (Astacopsis gouldi) is the largest freshwater invertebrate in the world.

campaign to alert community members to possible causes of increased phosphorus in water ways, associated problems and ways to reduce levels and also a 'Save the Giant Freshwater Lobster' campaign to highlight ways in which residents can protect this vulnerable species. Artwork provided by local school students has illustrated these campaigns.

The 2003 campaign was based on reducing the number of plastic grocery bags making their way into our waterways and oceans. School students and adults were invited to decorate reusable calico bags with a theme relating to the International Year of Freshwater. Sponsorship for prizes was gained from Woolworths Australia and Forestry Tasmania. The colourful bags sporting rivers, platypus, frogs etc were displayed at the Woolworths store and the Forestry Ecocentre in Scottsdale, and at Agfest, an agricultural showcase event held in Northern Tasmania.

Most recently the Dorset Waterwatch group has concentrated on biodiversity values in Northeast Park at Scottsdale. The Park is part of the Great Forester Catchment, with Tucker's Creek running through it. It is a mosaic of spring fed wetlands, artificial lakes and open areas with introduced and native vegetation. Group members have observed seven species of native ferns and a variety of fauna species including platypus, frogs, burrowing crayfish and the giant freshwater lobster. Three beautiful and informative interpretation signs have been erected by Dorset Waterwatch to highlight the natural values of frogs, burrowing crayfish and wetlands in general.

The signs are an example of the way in which Dorset Waterwatch has brought together many sectors of the community on a common project.

Water testing at Menlo wetlands.

The Australian Government provided funding through the Natural Heritage Trust as part of a Dorset Streamcare project. Employees of the State Department of Primary Industries, Water and Environment generously supplied technical advice and photographs, Dorset Council acted as host for both Dorset Waterwatch and Dorset Streamcare, Friends of Northeast Park provided input into the interpretation and school students contributed artwork. The signs were erected by volunteer Waterwatch members erected the signs.

Management of class 4 streams

Involvement of members in the community monitoring network has resulted in a keen interest in Class 4 streams in upper catchments. Undisturbed, upper catchment, Class 4 streams play an important role in maintaining environmental flows and water quality. They also provide important habitat for macroinvertebrates and juvenile freshwater lobsters. (Walsh 2000). Most recently a 48-hectare proposed logging coupe, at the base of Mt Scott, was the subject of a community based audit by members of Dorset Waterwatch. The coupe contains 28 hectares of rainforest and numerous class 4 streams, some of which flow underground for part of their course before re-emerging on the surface. The audit showed some deficiencies in the Forest Practices Plan for the coupe, which had not identified some of the streams. Consultation with Forestry Tasmania and Gunns Ltd resulted in correct

identification of some class 4 streams. Those parts of the coupe with high densities of class 4 streams have been protected, reducing the coupe to 15 hectares.

Green and gold frogs

Involvement in a school program is seen by the Waterwatch group as a vital way to educate future land and water managers. Dorset Waterwatch, in partnership with Scottsdale High School and landowners, have monitored and managed Menlo Wetland as a haven for *Litoria raniformis*, the green and gold frog. Menlo Wetland is a pocket of biodiversity in the middle of a productive farm. Students have observed native pepper, hard water ferns, swamp gums, greenhood orchids, burrowing crayfish (*Engaeus mairener* and *Engaeus tayatea*) and have heard the Tasmanian froglet, (*Crinia tasmaniensis*), and the common froglet, (*Crinia signifera*). The wetland is an area of about four hectares covered with native vegetation, where five springs surface. In the past it has presented a problem for land managers as it was too wet to clear and convert to pasture or crops, and stock sometimes became bogged during wetter months. The wetland has been fenced off to exclude stock and allow native vegetation to flourish and a frog-friendly dam has been constructed. The rehabilitation work has been a great success and the removal of grazing pressure and soil compaction from stock has led to a huge increase in understorey vegetation.

Community capacity building

The Dorset Waterwatch program of monitoring and community education has increased the knowledge, skills and understanding of participants. This increased community capacity allows individuals to work with relevant land managers in a wide variety of NRM areas. Participants have been involved in the development of the Brid-Forester Integrated Catchment Management Plan, the Ringarooma Catchment Plan, the Great Forester Catchment Water Management Plan, the Giant Freshwater Lobster Recovery Plan, the Dorset Natural Resource Management Strategy and the Natural Resource Management Strategy for the Northern Region. They have also participated in the setting of Protected Environmental Values and Water Quality Targets for the Great Forester River.

Dorset Waterwatch Annual General Meeting

Conclusion

Dorset Waterwatch began monitoring water quality and aquatic biodiversity ten years ago. The group has remained vibrant and active by regularly reviewing the results and observations obtained and using them to strategically plan a different focus for its community education campaign each year. Involvement in the monitoring network has increased the capacity of community members to engage in many areas of natural resource management.

Acknowledgements

Dorset Waterwatch and Dorset Streamcare have been funded through the Commonwealth Government's Natural Heritage Trust and hosted by Dorset Council.

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Recognising Indigenous cultural values and rights to water

Participation of Aboriginal people as researchers and negotiators is central to this Project titled *Indigenous Rights and Values to Water*. Together, researchers from Charles Darwin University and Macquarie University are working with the Anmatjere Community Council, NT Department of Infrastructure Planning and Environment and the Central Land Council, to improve the social and cultural outcomes of water resource management. The project is for three years and is funded by Land & Water Australia, with additional support from the Desert Knowledge Cooperative Research Centre.

Around the world and throughout Australia, a steady improvement in the recognition of the laws, rights and values of Indigenous or First Nation people is slowly taking place. Despite omission of these issues from Australia's COAG Water Reforms and the recent National Water Initiative, some of Australia's Indigenous population have made significant headway over recent years. Notably, the Murray Darling River Indigenous Nations (MDRIN) have forged the way through development of an Memorandum Of Understanding with the MDBC, input to the Living Murray Initiative (MDBC 2003) and preparation of an Indigenous Action Plan. In many other regions, Aboriginal people are working toward similar objectives, as connections are made with mainstream western decision-making processes regarding rivers, wetlands and water in general.

Such progress is based on the firm foundation of Australia's commitments to transparent and robust community consultation, as well as International Conventions and National legal instruments. Unlike land, which has been the topic of resolution and recognition of Indigenous rights through the Australian legal system, freshwater has escaped debate until relatively recently. Under western law, water is either owned privately through the Water Property Rights framework enacted in July 2004, or owned and managed by the Crown or State/Territory governments. At the same time, traditional owners and custodians have rights and responsibilities for managing water under Indigenous law that has never been relinquished (ATSIC 2002). Indigenous rights and laws have been invisible to most planning processes. Engaging all the community on equitable terms is a challenge now being faced around Australia.

Temporary spring in the Anmatjere Region, Northern Territory. Photo Angus Duguid.

Current management of 'natural' resources under western paradigms aims for integration of social, cultural, economic and environmental issues within a catchment or regional context. This approach is closer to the holistic way Indigenous people manage country. Water, land and sea are viewed as a connected entity, with spiritual and subsistence values, and contemporary and time-honoured laws intricately linked. In the NT, however, water management still falls under the domain of the NT Water Act as opposed to NRM or comparable legislation. The only Water Allocation Plan in the NT (DIPE 2002) was endorsed with no parallel NRM activity. That Plan states there are no known environmental or cultural values in the Ti-Tree Basin, despite the Aboriginal population that lives in this relatively remote region 200 kilometres north of Alice Springs, far outnumbering non-Indigenous residents. This project aims to

Indigenous people seek equity not just as another stakeholder, but equity between the two knowledge systems

The paintings represent an aerial perspective of the land and the rivers. Supplied courtesy of RedSand Art Gallery (www.redsandart.com.au)

Below: Dry sandy bed of Napperby Creek. Photo by Gladys Clancy

address this lack of recognition of Aboriginal rights and values, as well as highlight the value of learning from indigenous ways of managing cultural and natural resources holistically.

Although the National Action Plan is driving the development of NRM Plans that include water resources, mechanisms for Indigenous involvement outside the agreements made in some locations, remain academic (DEH 2004) and are unclear in terms of formal recognition of Indigenous law or knowledge systems. Indigenous participation is not as simple as provision of space for another stakeholder group. Indigenous people seek equity not just as another stakeholder, but equity between the two knowledge systems. A framework based on recognition of western and Indigenous knowledge and law is sought, with decision-making the result of 'bothways' — two overlapping ways with transformation as central (Kemmis 1998). This collaborative project in the NT seeks to advance this objective through a concurrent top-down and bottom-up approach.

Our aim is to develop pathways for engagement with the support of an Indigenous Rights Report that provides a strong irrefutable foundation for reform. The Project resources Indigenous people within the Anmatjere region to drive this process and to negotiate reform to institutional structures and NRM procedures. Parallel to the exploration of rights and mechanisms of engagement, is a three year cultural heritage project that resources the Anmatjere community to run water related activities. Potential outcomes such as knowledge preservation, invigoration of managing country and improved water quality and supply, aim to strengthen awareness of traditional and contemporary cultural values that underpin the aim for recognition of rights in current and future water management. These on-ground activities and capacity building, provide opportunities and resources for local people to build on in the longer term.

References

ATSIC 2002. ATSIC and Lingiari Foundation Partnership, Indigenous Rights to Waters Report and Recommendations.

Department of the Environment and Heritage 2004. Guidelines for regional bodies. Working with Indigenous Knowledge in Natural Resource Management, Commonwealth of Australia, 2004

Department of Infrastructure, Planning and Environment 2002. Ti-Tree Region Water Resource Strategy 2002.

Kemmis 1988, A Study of Batchelor College Remote Area Teacher Education Program 1976–1988: A Final Report, Geelong, Deakin Institute for Education Studies.

Murray Darling Basin Commission 2003. Report to the Murray Darling Basin Commission: Indigenous Responses to the Living Murray Initiative on The Living Murray document.

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Using surveys to connect researchers and wool growers in the Burra district to develop practical riparian management projects

Healthy rivers, creeks and streams are the arteries of the Australian environment. They provide the water to sustain many different plant and animal communities, as well as being the lifeblood of our agricultural enterprises and rural communities. Without healthy water bodies, Australia does not have a sustainable future. With 78% of Australian woolgrowers having properties that adjoin at least one waterway, managing these water systems and keeping them healthy is a crucial part of running a profitable wool producing enterprise. Land, Water & Wool's Rivers and Water Quality sub-program is helping woolgrowers find profitable, productive management options for land around rivers and streams. To do this, the program is studying issues such as gully and streambank erosion, water quality, weed management, and riparian zone management within a total grazing system.

One of the LWW Rivers and Water Quality sub-program projects is located in the Burra region of South Australia. Rivers and their adjacent riparian areas in much of the mid-north of South Australia were once prime grazing country, typified by native grasslands and fresh water. These areas are now showing increasing signs of stress and degradation, including rising river salinity and reduced pasture productivity. The aim of the project 'Optimising wool production and profitability in the mid-north riparian areas' is to assist wool producers in the mid-north region of South Australia determine the most cost-effective way to manage riparian frontages so that both productive and environmental gains can be made.

Wool producer involvement is crucial to this project, and before any funds have been invested, a survey was posted to 109 wool growers in the Burra region seeking data about their grazing practices, riparian area management and asking them to identify the issues they wanted investigated by the project. The wool producers who received the survey were identified as owning riparian land through Local Government Assessment records that show whether a farm has a creek running through it. Wool producers were surveyed along the Burra, Brady, Baldina, Newikie and Wonna Creeks. A survey was also sent to the Goyder Council and the National Parks and Wildlife Service which both own land and conservation parks in the Burra region.

The 25 responses received (22% response rate) will form the basis of the project research and demonstration studies and will provide local knowledge and experience on the key issues impacting on riparian condition and management in the region. The results show 92% of the wool growers who responded are interested in being involved in the Land, Water & Wool – Rivers project in the Burra region. Of the wool growers who are interested in becoming involved in the project 52% (13 respondents) would like to have a trial site on their property. Twenty-one respondents (84%) would like to receive information as the project progresses while 80% (20 respondents) of the wool growers are interested in participating in project workshops and field days.

These results indicate there is significant interest in the project and awareness by local wool growers of the need to improve and rehabilitate riparian areas in the Burra region. The main riparian management issues for the surveyed wool growers was weed infestation (84%) followed by erosion of creek banks (48%); grazing pressure from feral/native animals (40%); and reduction in creek flows (36%). The main weed problems were Artichokes (72%); Boxthorn (68%); Salvation Jane (40%); Bathurst burr (37%); and Onion weed (36%). Other problem weeds included horehound, Pepper trees and Ward's weed.

The respondents cited the main difficulties in managing riparian areas as being the cost of fencing and weed management (76%); the cost of providing alternative stock water (44%); and they were unsure of how to access funding for on-farm works (36%). All the respondents rated their riparian areas as having medium or low production compared with their farm's total production and 100% of respondents graze their riparian areas, although one respondent has now excluded stock from these areas. The average creek frontage of respondents was eight kilometres and 72% of respondents have not

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See page 20 for more information on Land, Water & Wool – Rivers and Water Quality

completed any fencing along their riparian areas. When asked if they received any information about natural resource management, particularly riparian area management, 72% of respondents said they did not, which highlights the need for increased farmer awareness and educational material.

The results of the survey provide the research team with valuable information about the key riparian management issues concerning wool growers in the region. A wool producer reference group has been formed to guide the project, and work is now beginning in earnest to set up demonstration and research sites that address wool producer identified issues. The benefits of using a survey before investing in research, is that you involve those you want to take up the results of your project at the beginning, and know that the work you are undertaking will directly meet their needs. If you would like to know more about the project, visit the Land, Water & Wool website for more details or contact the project leader Kylie Nicholls.

For more information

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What's new on the Australian Natural Resources Data Library?

Are you interested in expanding your knowledge about your local river system and how it fits into the wider landscape? Then you should log onto the Australian Natural Resources Data Library (ANRDL) at http://adl.brs.gov.au/.

Developed by the Bureau of Rural Sciences in partnership with the National Land and Water Resources Audit, this database provides users with reports, datasets and other databases covering such diverse topics as agriculture, forests, vegetation, climate and weather in Australia.

Users can download any relevant information and store it on their own computer for easy access. The ANRDL can assist in making assessments for future natural resource management and planning. The clipping tool allows users to obtain only the data that is relevant to their area.

The ANRDL is constantly being improved and updated with the latest information to make it easier to access. A key feature allows users to view data through a web-mapping tool and focus on a specific area of interest in a particular region anywhere in Australia. Text description that provides users with a summary of the background information on how the data was collected and collated is also provided.

Visit the ANRDL website to learn more about its features and how they can be applied to your area of interest.

For further information

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