



I N L A N D
R I V E R S
N E T W O R K



Inland Rivers Network News

Quarterly Newsletter
Volume 8 Number 1 - Autumn 2003

Editorial

Greg Williams, IRN Coordinator

Past, present, future

Beginning of March 2003: the 19 inland Water Sharing Plans so far considered have been gazetted, the State election is looming and the 'Living Murray' process lurks in the background...

At the end of 2000, the Carr Government came good on a promise of long overdue water reform through the passing of the *Water Management Act 2000*. Environmentally, the Act has some excellent provisions, however the intent to improve the ecological health of water sources in NSW was the first political casualty in the implementation of the CoAG water reform agenda. In the name of community consultation, the Department of Land and Water Conservation employed the services of stakeholder representatives drawn from the community and agencies alike. After months of consultation the draft water sharing plans were produced. Community reaction and sentiment then started filtering through.

"Minister, how is it that the environmental water stored in the dam can be used for other purposes such as irrigation?"

"What happened to the principle of establishing and protecting the ecological needs of water sources and their dependent ecosystems prior to allocating water to other users?"

It is one thing to engage in community consultation, but completely another to implement a public relations exercise. The realisation of what the committee process became is gradually sinking in, and the message has been coming from this office for quite some time now. The government has used an innovative attempt to employ community consultation to effectively rubber-stamp the status quo, i.e. the pre-existing 1998 environmental flow rules for the benefit of extractive water-users. As a result the gazetted plans look nothing like the spirit or intentions of the Act.

And before anyone rushes to the defence of the Department claiming that the WSPs are based on the 'best available science', let me say this and make no mistake about it: the best science was available and it wasn't used. Take the Gwydir Regulated River WSP as a case in point. Both Fisheries and National Parks and Wildlife asserted during the Committee process that the 25 gegalitre Environmental Contingency Allocation (ECA) was insufficient for the needs of the Gwydir wetlands and the requirements of fish for passage and breeding. The committee then asked them to produce reports substantiating these ecological needs. NPWS identified the need for 100 GL whilst Fisheries identified between 70 and 140

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GL. If the environment was being given highest priority as required by the Act then one of these figures should have appeared in the draft WSP. It didn't. Instead what initially appeared was 45 GL - halfway between the existing 25 GL ECA and the lowest volume identified in the two reports. Further negotiations, which should not have been necessary, revised this figure to between 45 and 90 GL. However this water is defined as Supplementary Environmental Water, meaning that it may "be taken and used for other purposes". Consequently the environment comes in behind irrigation demands.

So the recent gazettal of the Water Sharing Plans brings us to the upcoming election, which incidentally is on World Water Day, the theme being "Water for the Future". Is it too much to hope for that 22 March 2003 will prove to be a day for celebrating water conservation in NSW? Enclosed in the following pages is our interpretation of the water policies from the Liberal-National Party, Greens and Democrats. At the time of writing, the Labor Party policy on water had not been released. Judging from what we have read of the Liberal-National water policy, one can only wonder where they have been for the last five years. Whilst Labor execution of water reforms has left us wanting more, if Liberal policy is given the opportunity to be translated into practice one can only speculate about the long-term environmental implications. Does the Coalition really believe that they can isolate the state of NSW from higher political processes such as binding CoAG agreements (Have they not heard of Tranche Payments?).

Just beyond the current political horizon lurks the 'Living Murray' process, which presents itself as another opportunity/chance for the next NSW government to demonstrate their environmental credentials. Let's face it, being 'green' is not just about being a 'tree-hugger', it should also include being a 'water-lover'!

Here's the real challenge: The figure of 4013 GL has been identified (in the 'Independent Report of the Expert Reference Panel on Environmental Flows and Water Quality Requirements for the River Murray System') as being the only option that has a high probability of achieving a healthy working Murray River system. Despite this knowledge the only options that are on the table are 350 GL (low probability of achieving a healthy Working Murray River system); 750 GL (low to moderate probability); and 1500 GL (moderate probability). At the moment the deadline for making a decision is October 2003. A new 'mandate' from the NSW voters, combined with the scientific knowledge about how much water is needed to return the Murray River to health leaves the incoming government with absolutely no excuse for not making a serious contribution to the 1500 GL volume identified in the 'Living Murray' process. At let's not forget that the *Water Management Act* requires the development of Water Management Plans which includes (but are not limited to) water source protection, drainage management, and floodplain management.

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IRN Election Asks & Issues

1. The environment must reap the benefit from any public contribution towards water savings.

ISSUE: Currently water savings secured from the public purse may not benefit our rivers and their ecosystems. As a result taxpayers may be contributing to improved infrastructure that has minimal benefits to the environment.

SOLUTION: A commitment that publicly funded water efficiency savings be returned to the environment for ecological purposes with appropriate structural adjustment incentives to encourage landholders to adopt such measures.

2. Freshwater resources must be maintained as a publicly owned asset.

ISSUE: There is a significant push to compensate water access licence holders should their access to water resources be reduced as a result of environmental regulations. IRN has major concerns with the concept of 'compensation' (see our submission to the CoAG report on Water Property Rights at www.irnsw.org.au), although we acknowledge the need for structural adjustment to assist with the implementation of water reforms.

SOLUTION: A commitment that freshwater resources will remain in public ownership and that the rights of the environment to benefit from this water will be protected now and in the future.

3. The NSW section of the Murray-Darling Basin must be restored.

ISSUE: Currently the Murray Darling Basin Commission is undertaking a staged process to restore the Murray River called the "Living Murray" process. The Murray Darling Basin Ministerial Council (on which NSW is a member) has recommended that 3 levels of restoration (reference points) be explored. The highest of these reference points (1500 GL restored across the Basin over 10 years) only gives a moderate chance of restoring the River to health. Ultimately the Ministerial Council will have to dictate the extent to which the River will be restored and how this will be achieved. Although NSW has committed to the "Living Murray" process there has been no indication as to the level of restoration of the river they will commit to.

SOLUTION:

- A public commitment to the restoration of at least 1500 GL over 10 years to the Murray River, commencing 2005.
- A commitment to a 20% reduction in diversions across all NSW Murray-Darling Basin catchments over the next 10 years, both to improve the health of these rivers, and to form the NSW contribution towards the minimum 1,500 GL of additional environmental flows required within the main stem of the Murray River (the 'Living Murray' project).

4. Appropriate funding

ISSUE: Progress in the protection and restoration of NSW's freshwater resources is being stalled or compromised by a lack of resourcing.

SOLUTION: A commitment to the full resourcing of:

- Water Management Plan implementation;
- The Murray-Darling Sustainable Rivers Audit program;
- NSW's share of the 'Living Murray' capital works budget (agreed to in principle by the Murray-Darling Basin Ministerial Council); and
- The mitigation of cold water pollution from all state-owned large dams.

5. The establishment of Freshwater Aquatic Reserves

ISSUE: "Freshwater rivers may be the most degraded ecosystems in NSW..." (NSW State of the Environment Report 2000, p.6). There is currently no formal protection for unique and/or high conservation value freshwater environments in NSW despite the existence of appropriate provisions under the *Fisheries Management Act 1994*.

SOLUTION: Freshwater aquatic reference sites established to encompass 10% of streams and wetlands in each inland catchment based on representativeness and/or high conservation value, by mid-2004.

Water Policy: Where the parties stand

The Coalition

“A New Era
in Water
Management”

IRN Comment

Although the Coalition say that they "would manage water sustainably, balancing the needs of water users, communities and the environment", there is little evidence in their policy of a full commitment towards this philosophy.

The Coalition's policy, although containing some elements worthy of mention (namely rebates for rainwater tanks and improved funding for science and data collection), makes little mention of or commitment to ecological restoration. Rather, their policy focuses mainly on "repairing the damage" to communities from the adverse impacts of current water management practices. With the health of NSW rivers on the downward spiral this policy gives little comfort that the protection and restoration of our freshwater resources will be the priority for a future Coalition Government.

Key Policy Commitments (summarised and abridged)

- Comprehensive water property rights and structural adjustment assistance where future water reductions occur (based on the socio-economic impact assessments);
- Altering the Water Management Committee process to ensure that **only** local representatives have voting rights and that **only** plans that have approval by local stakeholders are implemented;
- Increasing funding by \$500,000 per annum for the collection and improvement of scientific data to support Water Management Planning;
- Explore system savings and market-based schemes as an alternative to future water cuts;
- Refocus the Department of Land and Water Conservation to one of advice and assistance;
- Ensure implementation of \$40 million commitment to structural adjustment in the Namoi Valley;
- \$1.25 million over two years in other valleys for a comprehensive study to investigate the requirements of groundwater users;
- Improve water quality and town water supplies by increasing funding to the Country Town and Water Sewerage Program from \$56 million per annum to \$100 million per annum and by providing rebates for the installation of rainwater tanks.

Full policy document at http://www.nsw.liberal.org.au/media/view.cfm?media_id=669

The Greens NSW

“...will strive
to ensure that
water is
managed in
an ecologically
sustainable
and socially
just manner”

IRN Comment

The NSW Greens water policy is an informed and progressive document that contains detailed commitments under a series of policy areas. The fact that it obviously prioritises the restoration and protection of both the urban and rural freshwater environments of NSW is heartening. It touches on water management areas that are both difficult and controversial, including the issue of Native Title to water.

Further, it pulls no punches in naming the organisations that the Greens see as accountable for the reforms they commit to in this document. It is a policy document that appears to be drafted as though it is one day going to be implemented.

The Democrats

“Our wetlands must be protected, expanded and restored”

IRN Comment

There is some pleasing language and ideas in this policy document; and the Democrats proudly claim that water resources should be considered and managed as if they are "natural heritage" items.

It is obvious that environmental protection and restoration is the intent of the policy document, however the policy is light on the nuts and bolts of how all this will be achieved. Although to their credit the Democrats are asking for targets to be set, there is no direction in the policy as to their preference for these targets – what will they be?, what will they do? Even though this policy leaves you with the sense that the

Democrats have a positive agenda towards our freshwater resources, there is a certain lack of detail that needs to be spelled out.

Key Policy Commitments (summarised and abridged)

- Water catchment plans, including performance and discharge targets and implementation schedules based on an inventory of all Australian rivers and the state of the health of those rivers;
- Wetlands protected expanded or redeveloped where possible and ensured of adequate water flow;
- Funding to enable landholders and the community to preserve and restore riverbank habitats;
- Tougher penalties for polluters and 'user pays' principle to water users and polluter;
- Reduce and control salination of river systems such as the Murray Darling, particularly with regard to irrigation and land clearing practices;
- Immediate protection and restoration of riparian corridors and buffers;
- Immediate steps to reduce the nutrient, phosphate and sediment inputs into river systems;
- Opposing the development or expansion of broadscale irrigated agriculture in northern Australia;
- Active encouragement for irrigators to switch from wasteful and harmful practices such as flood and furrow irrigation to drip and microjet;
- Opposing privatisation of any aspect of the supply and management of water;
- Implementing financial incentives to encourage protection of rivers and riparian areas on private land;
- Protecting rivers, streams and underground waters from modification unless comprehensive environmental impact assessments;
- Protecting all remaining wild and scenic rivers.

Full policy document at www.democrats.org.au/policies (Under heading of 'Environment and Welfare')

The ALP had not released its water policy at the time of IRN News going to press

Key Policy Commitments:

The Greens water policy is a comprehensive Policy (too large to detail) that covers the following areas:

- | | |
|-----------------------------------|--|
| Accountability to public interest | Drinking water quality |
| River issues | Water Use |
| Native title | Water conservation and demand management |
| Water conservation | Private water extraction |
| Floods | Wastewater management |
| Water for the environment | Sewage treatment and disposal |
| Aquatic protection zones | Interim sewage disposal goals |
| Salinity | Sludge recovery |
| Groundwater | Effluent reuse |
| Wetlands | Storm water |
| Extractive Industries | Water contamination |
| Water storage and treatment | |
| Damming our rivers | |
| Water Pricing and Revenue | |

To view the full policy document go to <http://203.147.249.97/GreensPublic/policies/Water.htm>

Across the Basin

Murray-Darling

Sitting Member: Peter Black, ALP
 Margin: 4.3 %
 Rivers: Murray, Darling, Lachlan, Murrumbidgee, Paroo, Warrego
 Issues: Are you fully committed to the provision of 1500 GL to the Murray River as a first step to restoring the health of the Murray River?

Murrumbidgee

Sitting Member: Adrian Piccoli, NP
 Margin: 12 %
 Rivers: Murrumbidgee, Murray
 Issues: Are you fully committed to the provision of 1500 GL to the Murray River as a first step to restoring the health of the Murray River?

Should Supplementary Environmental Water be for the exclusive use of the environment, or should other users have access to it?

Lachlan

Sitting Member: Ian Armstrong, NP
 Margin: 16.3 %
 Rivers: Lachlan
 Issues: Should Supplementary Environmental Water be for the exclusive use of the environment, or should other users have access to it?

Albury

Sitting Member: Ian Glachan, LIB
 Margin: 14.9 %
 Rivers: Murray
 Issues: How do you propose to protect the present and future needs of the environment upon granting comprehensive water property rights for extractive users?

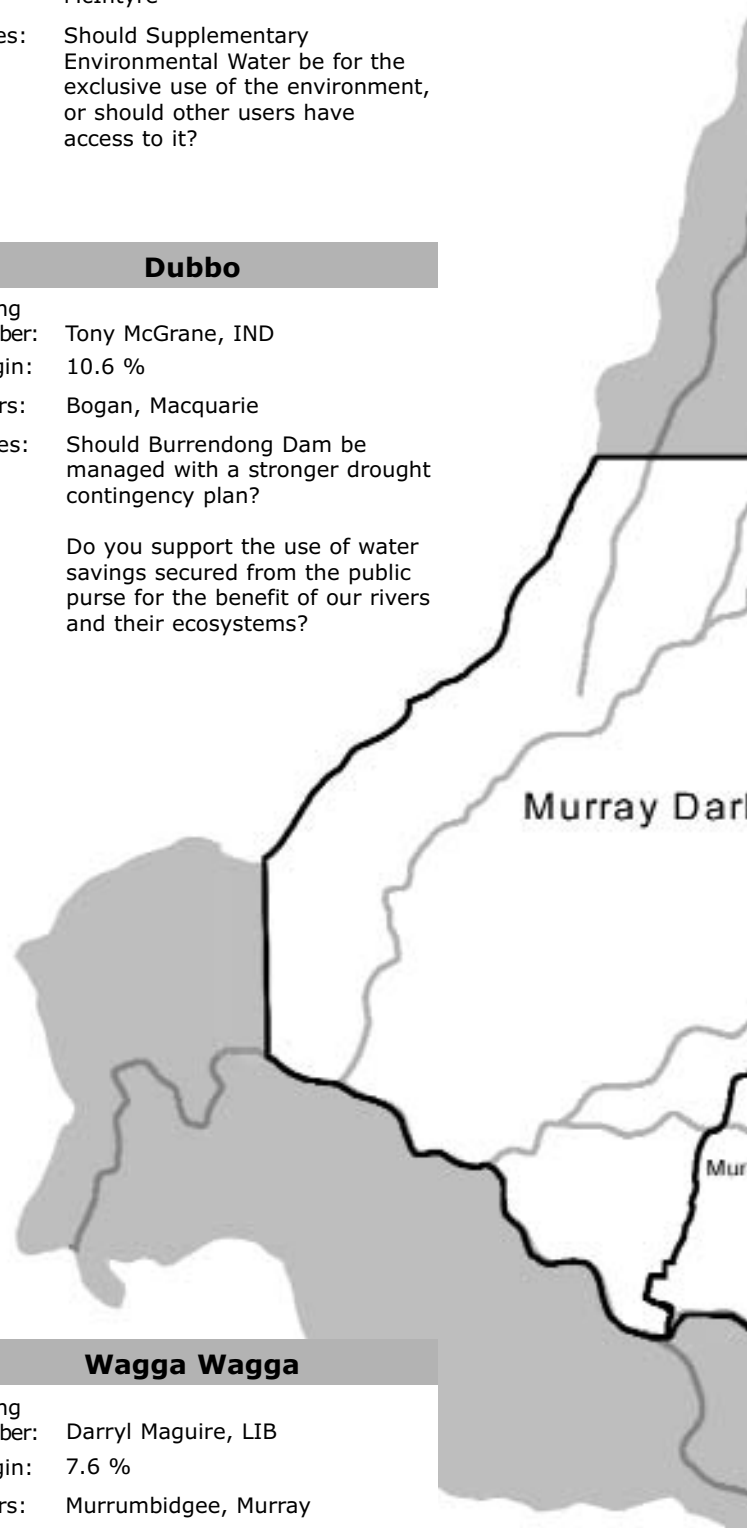
Barwon

Sitting Member: Ian Slack-Smith, NP
 Margin: 17.2 %
 Rivers: Darling, Balonne, Bogan, Macquarie, Namoi, Gwydir, McIntyre
 Issues: Should Supplementary Environmental Water be for the exclusive use of the environment, or should other users have access to it?

Dubbo

Sitting Member: Tony McGrane, IND
 Margin: 10.6 %
 Rivers: Bogan, Macquarie
 Issues: Should Burrendong Dam be managed with a stronger drought contingency plan?

Do you support the use of water savings secured from the public purse for the benefit of our rivers and their ecosystems?



Wagga Wagga

Sitting Member: Darryl Maguire, LIB
 Margin: 7.6 %
 Rivers: Murrumbidgee, Murray
 Issues: Are you fully committed to the provision of 1500 GL to the Murray River as a first step to restoring the health of the Murray River?



Northern Tablelands

Sitting Member: George Torbay, IND
 Margin: 17.8 %
 Rivers: Gwydir, McIntyre
 Issues: Do you support the use of water savings secured from the public purse for the benefit of our rivers and their ecosystems?

Tamworth

Sitting Member: John Cull, NP
 Margin: 13.62 %
 Rivers: Namoi
 Issues: How do you propose to protect the present and future needs of the environment upon granting comprehensive water property rights for extractive users?

Upper Hunter

Sitting Member: George Souris, NP
 Margin: 10.5 %
 Rivers: Macquarie
 Issues: Should there be more detailed analysis of groundwater interference from coal mining?

 Do you support the use of water savings secured from the public purse for the benefit of our rivers and their ecosystems?

Bathurst

Sitting Member: Gerard Martin, ALP
 Margin: 17.9 %
 Rivers: Macquarie, Lachlan
 Issues: Do you support the use of water savings secured from the public purse for the benefit of our rivers and their ecosystems?

Orange

Sitting Member: Russell Turner, NP
 Margin: 6.4 %
 Rivers: Lachlan
 Issues: How do you propose to protect the present and future needs of the environment upon granting comprehensive water property rights for extractive users?

Burrinjuck

Sitting Member: Katrina Hodgkinson, NP
 Margin: 1.3 %
 Rivers: Murrumbidgee
 Issues: Do you support the use of water savings secured from the public purse for the benefit of our rivers and their ecosystems?

Monaro

Sitting Member: Peter Webb, NP
 Margin: 0.3 %
 Rivers: Murrumbidgee
 Issues: What action will you undertake to ensure that the flows committed for the restoration of the Snowy River will be delivered?

There's Something About Murray

Pip Walsh looks at the Murray-Darling Basin Commission's 'Living Murray' project.

There has been a growing awareness over the last 10 years that the Murray River and its tributaries are in serious ecological trouble - dying wetlands, endangered fish communities and increasing levels of salinity have all been noted. Finally a comprehensive report the "Snapshot of the Murray Darling Basin River Condition" released in September 2001 crystallised the inescapable fact that current management of the rivers in the Murray Darling Basin is not sustainable.

In April 2002 the Murray Darling Ministerial Council (the Ministers responsible for environment, land and water in each government) recognised the need for action, in particular the need to return water to the environment, and directed that the community be involved in the decision making process.

The Living Murray initiative is a Murray-Darling Basin Commission program commenced in response to this directive. (See website www.mdbc.gov.au/TLM/thelivingmurray.html) Although focussed specifically on the issue of the provision of additional water to the River Murray the Living Murray initiative aims to draw together much of the work of the Commission. It is critical for the health of the Murray and its tributaries that this program enables forward movement on actions to redress the damage done to the river.

The Ministerial Council chose three reference points to be used as the basis for further studies on costs and benefits and as the focus of community consultations - the provision of an additional 350, 750 or 1500 gigalitres (GL) per annum to the river. Scientific advice is that an additional average annual flow for the River Murray system of 750 GL would provide a low to moderate likelihood of restoring the health of the river system. 1500 GL per annum of additional flow would provide a moderate likelihood of achieving this goal. Unfortunately the Living Murray initiative does not discuss the amount of water needed to have a moderate to high possibility of restoring the health of the Murray system - about 4000 GL per annum.

Key parts of the Living Murray process have been the establishment of reference panels to consider scientific, social and economic aspects of water return at both a system wide and reach by reach level. In addition a community reference panel that includes representatives from the Australian Conservation Foundation and the Nature Conservation Council of

NSW meets regularly.

It is heartening that on the community reference panel there is general agreement from all, including the irrigation community, that change is needed. There is strong consensus that a rigorous and transparent system of water administration is required and that change will need to be evaluated at both a system wide and regional level to ensure best outcomes for both the river and the people who depend on it for their livelihoods.

Unfortunately the varying administrative and political realities in each of the states involved have made the wider community engagement process inconsistent and fragmented. The meetings to date have been more information provision than consultation or engagement. There has been little opportunity for people to contribute constructively to a much needed debate that should concern not only how much water goes into the river - but where and over what time period, and how impacts on local and regional communities are managed. If these issues are not resolved to the satisfaction of regional communities the amount of water returned to river systems is likely to be minimal in the face of stiff opposition.

There has been almost no consultation on the process outside the Murray Darling Basin; the Murray River, its tributaries and wetlands are a national treasure. It is vitally important for people outside the Basin to send a clear message that they support the need to look after the river and the provision of government assistance to enable the adjustment from current water use to more sustainable levels.

The Ministerial Council has indicated it would like to make a decision on water returns to the river in October 2003. Become involved in the process, read the documents available, request a meeting in your area and provide your views on the need for water returns and how this can be managed with equity for current water users.

The Living Murray needs to be recognised as an unprecedented opportunity - a national redevelopment project that warrants serious and sustained government attention and investment.

Pip Walsh currently represents the Nature Conservation Council on the Community Reference Panel for "The Living Murray Project". She was formerly employed by the World Wide Fund for Nature as the South-East Australia Program Manager.

Healthy Catchment, Healthy Catch

Greg Williams argues the importance of catchment health to a good catch.

Have you ever wondered about the fate of our native freshwater fish and what wild populations will be remaining in twenty years time? If our record with terrestrial mammals is anything to go by, it doesn't look good. We have the highest rate of mammalian extinction in the world. Seventeen species (24%) have become extinct in just 210 years, against an average background extinction rate of one species per million years. A further 11 (15%) have suffered a reduction in range. Of the 17 recorded extinctions, all with one exception have been caused through cumulative and synergistic impacts. That is, all but one mammalian extinction has been caused by a number of factors, including introduced predators (foxes and cats), introduced competitors (rabbits, sheep, cattle, goats, etc.), altered fire regimes, and the cultivation of well-watered floodplain areas. All of these factors have stacked up against a species and tipped it over the edge into oblivion. Let's not forget that we are talking about the very aspect that significantly sets Australia apart from the rest of the world – our unique fauna (and for that matter flora). My concern is that we are going to see the occurrence of a repeat scenario with our aquatic biodiversity.

In the Murray-Darling Basin we have about 33 endemic species, plus two other natives that have been translocated. In all, 16 species are listed as threatened species under state jurisdictions. The Trout Cod represents the best (or worst) example; a nationally endangered species that was once common and widespread throughout the southern Murray-Darling Basin river system. The last self-sustaining wild populations estimated to consist of about 1500 individuals occur in the Murray River between Yarrowonga Weir and Barmah State Forest, and in Seven Creeks (upper Goulburn River). The draft *Native Fish Strategy for the Murray-Darling Basin 2002-2012* states "Native fish populations are currently estimated to be about 10 per cent of their pre-European levels. Without any intervention this is likely to fall to 5 per cent over the next 40 to 50 years" (p.7).

The Murray-Darling Basin Commission has also produced a report *Snapshot of the Murray-Darling Basin River Condition*. Two key points stick out.

Firstly, catchment disturbance and changes to

nutrient and suspended sediment loads are the greatest contributors to the fact that over 95 per cent of assessed river length has an environmental condition that is degraded, and 30 per cent is substantially modified from its original condition. In other words, our rivers concentrate catchment-wide land-use practices. According to the 2000-2001 Annual Report for National Land and Water Resources Audit, thirteen valley's within the MDB were identified as having major problems with nutrients and turbidity, whilst another four had additional problems with salinity.

"The Murray Cod is not the only native fish whose conservation status is threatened by the thousands of weirs throughout the Murray-Darling Basin"

The second point that sticks out to me from the 'Snapshot' report is that the degraded condition of the Murray and lower-Darling appears to be the consequence of multiple impacts, *with the main impacts related to the operation of dams and weirs throughout the system*. An Environment Australia report titled *The status of Murray Cod in the Murray-Darling Basin* pointed out that whilst "persistence of the species is not of major concern [the] survival and integrity of wild populations are seriously threatened" (2001, p.37). One of the primary reasons cited for this concern is that, "*The effective partitioning of the Murray-Darling Basin through the creation of many barriers to fish migration (dams, weirs, locks) represents a serious threat to the genetic integrity of the species. Murray Cod are historically regarded as one genetic population. However, exiting stocks are becoming more fragmented and physically isolated leading to the potential for local erosion of genetic variability through genetic drift*" (2001, p.37). The Murray Cod is not the only native fish whose conservation status is threatened by the thousands of weirs throughout the Murray-Darling Basin.

The *Native Fish Strategy* identified eight key threats to the conservation status of native fish. Once again we have the situation where the cumulative impacts from a number of factors threaten the existence of a species and bring about yet another extinction. Even a superficial examination of the eight key threats identified by the draft *Native Fish Strategy* reveals that the first four relate to catchment disturbance and the operation of dams and weirs. Furthermore the seventh, diseases, is at least in part

exacerbated by the reduced genetic integrity created by this “effective partitioning”. The goal of the *Native Fish Strategy* is to rehabilitate native fish communities in the MDB to 60 per cent or better of their estimated pre-European settlement levels after 50 years of implementation.

“If we are to genuinely tackle river ‘health’ issues, we have to stop treating the symptoms and get to the causes of the problem.”

All this highlights is that if we are to genuinely tackle river ‘health’ issues and enjoy the prospects of greater fish numbers, we have to stop treating the symptoms and get to the causes of the problem. River salinity is not going to be solved in the long term by dilution flows, groundwater pumping or by putting chemicals into rivers upstream of monitoring points so that the salt load precipitates out of solution. The same can be said for blue-green algae.

It means that a lot of water will have to be returned to rivers – released from dams so that critical low flows and low to medium floods are restored, allowing fish passage during dry periods and re-connect rivers to their floodplains, which is important for food. It will also have to be delivered variably and in the natural seasons (late winter and spring instead of summer and autumn for southern rivers when the irrigation season occurs).

It also means that catchments have to be re-vegetated with deep-rooted perennial natives on a scale that we can barely imagine so that salt and sediment loads are substantially reduced. Large woody debris ‘freshwater reefs’, otherwise known as snags, in the form of branches, logs and whole trees also need to be returned to rivers.

Capping off the catchment restoration program is the need to proactively manage the thousands of weirs and dams across the entire Murray-Darling Basin catchment. This means redundant weirs should be removed, fishways installed on those identified to be necessary and cold water releases mitigated from large dams.

Only when these issues have been addressed can we start to enjoy the prospect of endangered fish becoming common again, reliable catches being made and fewer stories about the one that got away!

Lessons in Limnology

Fish – Life on a Knife Edge

By Simon Kaminskas

IRN News’ inaugural ‘Lesson in Limnology’ is inspired by the numerous fish kills that have occurred right across the Basin this past summer. Fish kills are usually caused by a combination of the following factors: excessive input of organic matter (such as discharges of water heavily-laden with blue-green algae, animal manure, sewage, brewery yeast and wine pressings); drought-related concentration (low flows and high evaporation rates); and excessively hot temperatures over an extended period.

What’s not widely appreciated is that fish are very vulnerable to fish kills by de-oxygenation because water holds amazingly little oxygen compared to air. In fact, water holds so little oxygen compared to air that it is amazing fish can actually live in water. Fish live on a knife’s edge when it comes to oxygen.



Murray Cod fish kill - this time in Broken Creek, Victoria, where isolation of weir pools led to a fatal decline in oxygen levels. Photo by Jack Dell, Numurkah Leader.

This is why people MUST NOT let water loaded with organic material – whether it’s algal ‘soup’, piggery run-off or wine pressings – run into a river without killing fish. Bacteria in the water will decompose this organic material, and take oxygen out of the water to do the job. The water holds so little oxygen anyway that there is no leeway for the fish - the water will run out of oxygen and the fish will die. Lots of organic material released into the water WILL mean fish kills!

The way to bring this fact home is to compare the amount of oxygen in air to the amount of oxygen in water. A litre of air is 21% oxygen by volume. A litre of water at 20° - a typical temperature for many Australian streams in the warmer months - is 0.000009% oxygen

by volume! Of course, the amount of oxygen in water varies according to temperature (more when colder) and altitude (less when higher) but is always in this ballpark - it is always very low.

It's because so many people are unaware of this amazing fact that fish kills continue to happen. This kind of knowledge should be a basic requirement for anyone managing a dam or a weir, as well as anyone who is in a position to release water with organic material into a river or creek - ie feedlot managers, wineries, etc.

It also reminds us how truly amazing fish are. Fish are the oldest vertebrates animals, and gave rise to all other vertebrates animals. They are the most diverse vertebrates. They come in the most amazing range of sizes, shapes and colours. And they live in an amazing diversity of environments, and have adapted to an amazing range of challenging habitats and conditions, including the sometimes harsh conditions of Australia's inland rivers. On top of this, they live on the knife's edge when it comes to oxygen.

Of course, fish don't show this. They swim around and eat and breed and take lures just fine thanks to their gills, which are amazingly efficient at extracting oxygen from water. However, the last thing they need is us releasing organic substances in the river (particularly during periods of low flow) and using up their limited oxygen. Let's show some consideration for our amazing fish, and make sure this kind of thing doesn't happen in future.

Simon Kaminskas is a passionate native fish conservationist who is finishing the final unit of his ecology degree at University of Canberra. He is a devoted catch and release native fish angler and writes many articles on native fish conservation.

EDITOR'S NOTE: Australia's riverine ecosystems have evolved in a nutrient-poor landscape (unlike their Northern Hemisphere equivalents) and are typically classified as 'oligotrophic' (literally meaning 'nutrient poor'). As a result, when nutrient levels increase above a very low threshold either from someone's carelessness or due to drought-related concentration, they exhibit an acute, adverse reaction such as described in Simon's article.

Network News

International Year of Freshwater 2003

2003 has been proclaimed International Year of Freshwater by the United Nations General Assembly.

- Visit the official website at www.wateryear2003.org to find out what activities are being planned for this year in Australia and around the world.
- Go to Environment Australia's site at www.ea.gov.au/water/freshwater/iyf/index.html to see what it has identified as the key issues in this International Year of Freshwater.



WaterYear2003

"It is a year for us to focus our attention on protecting and respecting our water resources, as individuals, communities, countries, and as a global family of concerned citizens. 2003 is a year for action and reflection. During this year we have a chance to mend our ways, to take stock and make a difference. By protecting our freshwater, we help to ensure our future and our planet's long-term prospects."

From the International Year of Freshwater website

100th site for Revive our Wetlands

The Revive our Wetlands program has reached an important benchmark, with its 100th targeted wetland now undergoing practical revitalisation. Revive our Wetlands was created two years ago to address the ongoing loss of one of Australia's most important ecosystems. The program committed to undertake 100 wetlands rehabilitation projects.

The final site, on the outskirts of Gisborne Victoria, is home to a population of Growling Grass Frogs listed as vulnerable under the *Environment Protection & Biodiversity Conservation Act 1999*.

"This project typifies the Revive program, which aims to restore fragile environments and combat threats to Australia's biodiversity," said spokesperson Libby McIntyre.

Many of the 100 Revive wetlands are in the 21 priority regions under the National Action Plan for Salinity and Water Quality.

For more information visit: www.reviveourwetlands.net

PROGRAM STATISTICS

- More than 13,000 volunteer days have:
- removed 502 hectares of weeds, hundreds of bags of rubbish and 180 kgs of carp;
 - planted 80,000 native plants;
 - undertaken 60 flora and fauna surveys;
 - erected 35 kms of new fences, maintained 30 kms of walking tracks and constructed 6 kms of new tracks

The Inland Rivers Network of NSW brings together community groups and individuals with the goal of restoring and conserving the biodiversity, natural function and health of the inland river systems and wetlands of NSW. Together with local, regional, state and national conservation groups, IRN seeks to promote greater understanding of the threats to inland rivers and the communities that rely upon their survival.

IRN steering committee member organisations:

- Australian Conservation Foundation
- Nature Conservation Council of NSW
- National Parks Association of NSW
- Coast and Wetlands Society
- Friends of the Earth



Help IRN protect our inland rivers and bring security and sustainability to regional communities. Send your donation to:

Water for Rivers Fund
Inland Rivers Network
Level 1, 29-35 Shepherd St
Chippendale NSW 2008

**Surface
Mail**

**Postage
Paid
Australia**

Inland Rivers Network

Level 1, 29-35 Shepherd Street, Chippendale NSW 2008
Tel: 02 9212 5112 Fax: 02 9212 6977 Mob: 0407 279 088
E-mail: coordinator@irnsw.org.au
Web: www.irnsw.org.au
ABN: 34 373 750 383



IRN Conference Proceedings – Available Now

The Way Forward on Weirs (Available as book or CD-ROM)

Twenty thousand or so man-made structures block the passage of water and aquatic life in the waterways of southeastern Australia. The ecological, social and economic consequences have been enormous. Despite the damage to the natural environment only a handful have been removed.

Taken from the IRN-hosted conference of the same name, *The Way Forward on Weirs* addresses four key questions:

- What are the effects of weirs on the environment?
- How can weir operations be altered to reduce environmental impacts?
- How can weirs be removed or modified? And
- Lateral thinking about water supply and management.

Thermal Pollution of the Murray-Darling Waterways (Available on CD-ROM)

The phenomenon of thermal pollution is not new. The lowering of water temperatures downstream from large dams has resulted in a significant decline in native fish populations. The flow-on of this cold water pollution into a wide range of social, environmental and economic impacts is now only beginning to be documented.

The Thermal Pollution Workshop, held at Lake Hume, June 2002, brought together a diversity of expertise from scientists to engineers, professionals in water resources, fisheries and conservation management – people with first hand experiences of the thermal pollution problem.

**Order these proceedings by calling
02 9212 5112 or visit www.irnsw.org.au.**