

THE MURRAY-DARLING BASIN NEEDS YOUR SUPPORT NOW MORE THAN EVER



The Darling River at North Bourke (Photo E Hollows, September 2011)

The draft Basin Plan released by the Murray-Darling Basin Authority (MDBA), on Monday 28th November, has confirmed IRN's worst fears about the future health of Australia's major inland river system.

We have 20 weeks, until 16th April 2012, to submit comments to the MDBA. This bumper edition of *IRN News* outlines the problems with the draft Plan and the opportunities we now have to turn the Plan around.

The Basin Plan is the best chance the river system has to redress the mistakes of past decision makers. The parochial power plays of the four Basin state governments, and their disregard for the needs of a healthy river system, have created an expensive problem that must be fixed. Future generations will thank us for taking a tough stand to prevent the death of a major river system on which we all rely.

This edition of *IRN News* outlines: ten key tests that the draft Basin

Plan fails to meet; the findings of the science review conducted by CSIRO; the impacts of the draft Plan on important wetland areas, bird and fish populations of the Basin; and the economic realities of the outcome.

The Federal Government has committed \$8.9b to returning the Basin to health. We need assurance that this taxpayer funding will be spent with maximum ecologically sustainable outcomes.

While no-one wants to see rural and regional communities disappear, there needs to be a clear understanding of the complex economic issues at play. It is dishonest to blame the various problems facing irrigation dependent towns on the return of water to restore the resilience of the river system.

These communities are highly vulnerable during prolonged periods of drought and need structural assistance to broaden their economic base.

The opportunity for small-scale producers to sell part of their water license to the Government, for return to the environment, gives them the ability to improve their water use efficiency. The spurious argument that environmental flows cannot be adequately managed because of 'constraints' highlights the inappropriate floodplain development that has occurred over time. None of these problems are insurmountable and they all need to be addressed. Irrigation communities have constantly threatened to take legal action against flooding caused by environmental flow releases. Yet they remain silent when irrigation demand releases cause flooding on private land. The issue of low level bridges and access can be fixed. The raising of Gradgery Lane above the Macquarie Marshes is a good example of how such access problems can be solved.

IRN needs your support to get the best Basin Plan outcome possible. The final Plan must be accepted by the Federal Parliament for it to become a legal instrument. Please make an effort to submit comments to the MDBA; and also write to your local Federal MP; Tony Burke, Minister for the Environment; and to Julia Gillard, PM, who needs to hear that many people across Australia want a good Basin Plan that will turn around the demise of Australia's greatest river system.

The draft Basin Plan can be found here: <http://www.mdba.gov.au/draft-basin-plan>

Comments to the MDBA can be made here: <http://www.mdba.gov.au/have-your-say>

CALL TO ACTION!

Now is your chance to speak up on behalf of the wetlands, the native fish, the water birds, frogs, reptiles, forests, billabongs and all the beautiful natural places that rely on the Murray-Darling River system for sustenance and survival.

It is also your chance to support the floodplain graziers, tourist operators, fishing industry, recreational fishers, bird watchers and other industries in the Basin who rely on a healthy river system.

Inland towns are faced with escalating costs of town water filtration if water quality continues to deteriorate. There are a million and one reasons why we need a good Basin Plan for the future health of inland rivers and the communities who live on them.

We certainly need a better Basin Plan than the draft that is out for public comment. All the independently reviewed science has indicated that

at least 4,000 GL must be returned to the environment in the Basin if the ongoing decline of environmental values is to be halted.

The decision will be made in Parliament. This means that politicians must hear that people care about the future health of the Murray Darling Basin. They need to hear that you want the wetlands, native birds, fish and animals of the inland to have a fighting chance.

The Murray-Darling Basin needs your support in many ways:

- Get the word out there that the Basin needs a drink
- Share the IRN and Lifeblood websites with friends, and check for regular updates
- Write letters to newspapers, ring talk back radio, talk to friends and neighbours

- Write to your local Federal MP. Contacts available here: <http://www.aph.gov.au/house/members/>
- Write to Tony Burke, Minister for Sustainability, Environment, Water, Population and Community
- Write a submission to the draft Basin Plan calling for 4,000GL to be returned to the environment

The MDBA is still drip feeding various pieces of information to the community as this newsletter goes to press.

For more detailed submission guides and regular updated information please go to the IRN website: <http://www.irnsw.org.au/>

And to the Lifeblood Alliance website: <http://lifeblood.org.au/>

The latest Basin news, media releases, reports and critiques will be available.

10-PART TEST FOR THE MURRAY-DARLING BASIN PLAN

1. Puts the Murray-Darling on a sustainable footing
2. Delivers good quality drinking water to 3.4 million Australians
3. Flushes 2 million tonnes of salt out to sea each year
4. Maintains healthy River Red Gum forests and Black Box woodlands
5. Allows waterbirds to nest and breed on a regular basis and rebuild populations
6. Stops the decline in native fish and supports a sustainable fishing industry
7. Enables Indigenous communities to maintain cultural practices and derive socio-economic benefits
8. Supports floodplain graziers who are dependent on regular floods to produce food
9. Provides a basis for a thriving and diverse tourist industry
10. Allows enough water to adjust to a changing climate

OUTCOMES OF THE DRAFT PLAN AGAINST THE 10-PART TEST

1. Will not provide a sustainable future for the Murray-Darling, especially since it will double groundwater extraction limits to facilitate the mining industry
2. Weak 'aspirational' water quality objectives with no teeth that will not protect drinking water from salinity and algal blooms
3. Falls far short of the very minimum of 4,000GL required to flush 2 million tonnes of salt out to sea
4. High probability that Red Gum and Black Box forests will die, especially on the Lower Murray
5. Little or no improvement in waterbird numbers
6. Insufficient water for fish to reach floodplain for breeding, fishing industry at risk
7. Indigenous communities miss out, no provision of cultural water allocations
8. Continued threat to productivity and food production for floodplain graziers
9. Declining tourist industry with no security for its major attractions
10. Decline of up to 37% in surface water run-off by 2030 due to climate change which has not been accounted for

Failings of the methodology used by the MDBA

The development of the new draft Basin Plan under the guidance of Craig Knowles as MDBA Chair has a number of significant failings that expose it as a politically contrived outcome. The MDBA now joins a long line of politicians and agencies who, in the face of opposition from States and vested irrigator interests, have failed to deliver for a healthy river.

It is now more important than ever to press for a Basin Plan that will provide the necessary environmental outcomes for the future health and resilience of Australia's largest river system.

These key failings include:

The MDBA has not modeled an environmental flow regime that would meet its own environmental targets

- The *Water Act 2007* requires that the Basin Plan set 'sustainable diversion limits' (SDL) which reflect an 'environmentally sustainable level of take' (ESTL) for each surface and groundwater resource.¹ This must be calculated using the best available scientific knowledge.²
- However, the MDBA included in its calculations of environmental needs the consideration of current system 'constraints' and socio-economic impacts. These should have been a separate analysis once the amount of environmental water needed to sustain the Basin was determined.

- The MDBA used 18 environmental asset indicator sites (major end of system wetlands) to determine the watering needs of all key environmental assets and ecological functions across the Basin.
- However, the draft Plan sets targets for these sites that will not restore their extent, but instead allow for further loss.
- The MDBA then failed to run computer models that allowed even these depleted targets to be met.

Double the limits for groundwater extraction

- The MDBA originally identified that an additional 400 GL could be extracted from deep groundwater systems that are considered to be 'under-allocated.' Very little is known about groundwater recharge rates or connectivity to surface water, other groundwater systems or to groundwater dependent ecosystems.
- The draft Plan has increased this volume by over 2,000GL (the proposal would double the amount of groundwater currently permitted for use) because the NSW Government identified greater needs for mining and coal seam gas extraction.

Likely reductions in surface water runoff due to climate change have been ignored

- The draft Plan has used historic records to calculate stream flow in the system.
- The proposed 3% reduction in water availability due to climate change that was factored into the *Guide* has disappeared from the draft Plan.
- Any consideration of likely impacts of climate change on runoff and stream flow has been delayed to the 2015 review of the Plan.

Independent scientific reviews have been prevented from asking crucial questions

- The CSIRO review of MDBA methodology to assess river health has not tested the adequacy of the 18 indicator sites used as 'proxies' for environmental watering needs of the 2,442 key environmental assets across the Basin.
- There has been no consideration of what the rivers need to maintain ecological function over the long term, on a valley by valley and whole of Basin scale.
- The ecological trade-offs have not been clearly identified or examined.

For more information on what's not factored into the proposed Basin Plan go to: <http://lifeblood.org.au/media/media-briefs/>

1 Water Act 2007, s23 & s4
2 Water Act 2007, s21(4)



(Photo Lou Kan)



The Darling River - a system in need (Photo Ruby Davies)

The Economic Facts of the Draft Basin Plan

The Australian Conservation Foundation (ACF), an IRN Member Group, has recently released a briefing paper debunking some of the myths around economics and food production in the Basin. It is summarised here below – see end of article for the link to the full brief.

It's in our national interest to protect and restore the Murray-Darling Basin.

Claims that returning water to the Murray-Darling River System will increase the price of food in Australia are grossly misleading.

Land and water degradation threaten food production

On the day the draft Murray-Darling Basin Plan was released, the Food and Agriculture Organisation of the United Nations issued a report alerting the world to land and water degradation threatening global food production.

The report states that today a number of the world's food systems "face the risk of progressive breakdown of their productive capacity under a combination of excessive demographic pressure and unsustainable agriculture use and practices".

It goes on to say that "No region is immune: systems at risk can be found around the globe, from the highlands of the Andes to the steppes of Central Asia, from Australia's Murray-Darling river basin to the central United States".¹

Achieving a healthy river does not determine the price of food

In 2008 the Australian Competition and Consumer Commission concluded "a range of factors have contributed to the recent increases in food prices in Australia, including the current drought, natural disasters in combination with quarantine restrictions and the world commodities boom."²

1 FAO, Scarcity and degradation of land and water: growing threat to food security, 28/11/11, <http://www.fao.org/news/story/en/item/95153/icode/>

2 ACCC, Report of the ACCC inquiry into the

The Murray Darling Basin Authority found "the significant role that international markets have in determining the prices for many of the Basin's outputs, and that a significant proportion of its agricultural product is for export, the Basin Plan is unlikely to have much effect on national food prices... the real value of agricultural production, after abstracting for productivity growth, has been in long term decline since 1950—indicating long term downward pressure on prices for agricultural produce".³

Most food produced in Australia is exported

About 60 per cent of the food grown in Australia is sent overseas. According to the Reserve Bank of Australia – 63 per cent of dairy, 62 per cent of meat, and 61 per cent of grain production was exported overseas.⁴

Supermarkets are big players in setting domestic food prices

Unfortunately for farmers, supermarkets have more power over the price consumers pay for food at the check-out than they do.⁵ Farmers are acutely aware of this. In 2011 the NSW Farmers Association reported that the "retail driven [milk] price is disconnected from the cost of production and therefore will not convey market signals to the consumer, placing the sustainability of the industry at stake".⁶

competitiveness of retail prices for standard groceries, July 2008, p.14

3 MDBA, Socioeconomic Analysis of the Draft Basin Plan, MDBA, 2011, Vol. 1, p.45

4 Rayner, V., Tan, N., Ward, N., Trends in Farm Sector Output and Exports, December Quarter, <http://www.rba.gov.au/publications/bulletin/2010/dec/1.html>

5 Wardle, J. & Baranovic, M., "Is lack of retail competition in the grocery sector a public health issue?" Australian and New Zealand Journal of Public Health, Vol. 33, No. 5, 2009, p. 478

6 NSW Farmers Association, Submission to the Senate Inquiry into the Impacts of Supermarket Price Decisions on the Dairy Industry, March 2011, p.2

Irrigators use the water market to manage the impacts of drought

It is wrong to say that setting limits on irrigation water use will have the same impact as drought on irrigation businesses and be the primary cause of increasing food prices. In reality, drought increases irrigation water demand and has most negative impacts on dry land agriculture. Setting sustainable limits on irrigation water use don't. With sustainable limits in place irrigators are able to trade water, or invest in efficiencies to meet their business demands.⁷ The Reserve Bank of Australia reported that despite the drought, Australia-wide agricultural output increased with average annual growth of around 1½ per cent.⁸

Dry land farmers also produce food

The irrigation sector isn't the only food producer in the Basin. In 2005-06 non-irrigated agriculture - farmers who rely on rainfall - accounted for 63 per cent of the gross value of agricultural production in MDB.⁹

For the full brief on the ACF website go to: http://www.acfonline.org.au/uploads/res/111129_ACF MDB food price_brief.pdf

For other ACF reports and analyses related to the Murray-Darling Basin Plan visit the Healthy Rivers page of the ACF website at: <http://www.acfonline.org.au/>

7 Langford, J. & Briscoe, J., Crisis and opportunity: Lessons of Australian water reform, CEDA, November 2011, pp.27 & 28

8 Reserve Bank of Australia, Trends in Farm Sector Output and Exports, December Quarter 2010; <http://www.rba.gov.au/publications/bulletin/2010/dec/1.html>

9 ABARE, Assessing the regional impact of the Murray-Darling Basin Plan and the Australian Government's Water for the Future Program in the Murray-Darling Basin, p.1 http://www.daff.gov.au/_data/assets/pdf_file/0011/1812971/regional-impact-mdba-2010.pdf

Recreational Fishing – good news for regional economies

An economic study has confirmed that recreational fishing is one of the largest contributors to the economies of towns in the Murray-Darling Basin.

The study, released by the newly established Murray-Darling Basin Recreational Fishing Council, highlights the importance of sustaining healthy and sustainable fishing in the vast river system.

CEO of the Australian Fishing Trade Association, Mr Alan Hansard said "A recently released study has shown that

recreational fishers spend approximately \$1.3 billion in the Murray-Darling Basin every year when they go fishing. This is a reminder that looking after our rivers and fish communities won't just provide much-needed environmental benefit, but will also afford enormous economic benefit to regional communities as well".

For the full study report Economic contribution of Recreational Fishing in the Murray-Darling Basin go to: <http://www.vrfish.com.au/>

What does the *draft Basin Plan* deliver for Australia's Birds, Fish, Frogs and Turtles?



Ibis chicks (Photo Kate Brandis)



Snake-neck Turtle (Photo Neil Zoglaven)

The Commonwealth Water Act 2007 requires the Basin Plan to protect the water requirements of internationally significant wetlands and bird species listed under migratory bird agreements.

IRN is concerned that the draft Plan will not meet these legal requirements.



Olive Perchlet (Photo Scott Godwin)

The failure to provide more environmental water to some of the Nation's most degraded and water starved wetlands, such as the Gwydir Wetlands, and the proposal to allow significant growth in groundwater extraction may undermine efforts to protect such iconic birds as the Brolga, Grey Teal, Night Heron, Straw Necked Ibis and Royal Spoonbill.

Waterbirds

Since 1983, waterbird abundance in the Basin has declined by eighty percent. To breed successfully, colonially nesting waterbirds require flooding of sufficient volume and duration to inundate colony sites and feeding areas for at least 4 – 5 months between August and April. These flows are also critical for the health of the flood dependent vegetation and aquatic invertebrates required to support the colonies breeding success. Recent scientific studies, undertaken after the last two wet seasons have provided a long overdue wetting of our nation's wetlands, show that the addition of water has resulted in considerable ecological outcomes. Significantly despite huge areas of habitat loss, numbers of bird nests and species are being recorded in similar numbers to the early 1980s.

Native fish

The native fish of the Murray-Darling have not had a similar level of success in reestablishing numbers after recent environmental flow releases and natural flooding. Significant numbers of introduced fish such as Carp and mosquito fish (*Gambusia*) are competing with native fish such as the Carp Gudgeon and the Spangled Perch for food, and are predating small fish and tadpoles. Poor water quality and blackwater events have significantly impacted upon older breeding native fish, such as Murray Cod. Generally the recruitment response from Carp has overwhelmed the increase in Native Fish species. While number of species found in wetlands increased, the age of those fish suggests this is a factor of dispersal, rather than recruitment of young fish. The Proposed Basin Plan does not specifically address the risk to the continued health of our Native Fish.

Frogs

The frogs of the Murray-Darling have responded to recent wet conditions, but it has not been an across the board success story. Generalist species, and frogs who can survive in agricultural areas, have successfully dispersed in recent wet events, but more specialist frog species have not enjoyed such success. Additionally those areas which received an environmental water release, such as Yanga National Park, and accordingly have had three good years have enjoyed a much more widespread and significant recolonisation process. It is thought that it takes at least 3 years to re-establish healthy breeding communities and recruitment into adult populations. First year wetting of wetlands can create hostile conditions such as poor water quality, large numbers of predators such as *Gambusia*, and breeding adults are in poor condition.



Southern Bell Frog (Photo David Webb)



Native turtles

Very little is known about the seven species of native turtles found in the Murray-Darling Basin, one of which is listed as vulnerable. Turtles take a long time to reach sexual maturity (10 years), and suffer intense nest predation from pests such as foxes, losing 90% nests to predation. Sampling in the Murray downstream of Yarrowonga weir compared turtle populations after prolonged wet period 1976 – 1982, and 2009/11 after prolonged dry period. All 3 species recorded decreased in numbers and their population became dominated by mid to large adults and juveniles were rare. It is thought that the large mortality was due to the prolonged drought conditions reducing available habitat, temporary wetlands on the floodplain. While there was little recorded response to the wet conditions, one study found a 10% increase in body condition in turtles over the wet year. Long term recovery needs specific environmental flow releases to be maintained as well as control of predators.

Ibis nests (Photo Kate Brandis)



Gwydir Wetlands

The Gwydir has seen a 75% increase in the average period between flooding events. Accordingly, the Gwydir wetlands have been significantly impacted in the last 20 years (420 square kilometres down to 20 square kilometres of lignum). Almost all of the extensive water couch that once occurred in the Gwydir wetlands has disappeared. Water couch requires flooding in spring or summer at least once per year. Amphibious vegetation has reduced by 95%. Recent watering (environmental water release in 2009) and natural flooding has improved both vegetation extent and condition with the high water levels associated with more natural flooding having a more significant improvement in vegetation condition. Regulation and extraction causing changes to hydrological regime have been documented as the key cause of degradation in these wetlands. Over 75 waterbird species have been listed in the Gwydir, 18 listed on JAMBA/CAMBA or ROKAMBA, such as the Caspian Tern (*Sterna caspia*) and the Great Egret (*Ardea alba*).¹

¹ Gwydir Wetlands Adaptive Environmental Management Plan: Synthesis of information projects and actions (2011) NSW Department of Environment, Climate Change & Water; Roberts, J. & Marston, F. (2000) Water regime of wetland and floodplain plants in the Murray-Darling Basin: a source book of ecological knowledge, CSIRO Land and Water, Technical Report 30/00, Canberra; Ramsar Information Sheet: Gwydir Wetlands: Gingham and Lower

The Basin Plan Guide noted that the Gwydir wetlands meet all of the criteria for key ecological assets and estimated a further 89 GL of water to be recovered. This would protect only 30% of the floodplain vegetation.

The Proposed Basin Plan provides even less water to the Gwydir, a wetland site in clear decline. Only the estimated 59 GL of environmental water already recovered will be reduced from the baseline diversion limit. This is 30 GL per annum less than compromise already identified in the Guide. This is likely to result in a further decline to Gwydir Wetlands, and loss of significant habitat for several Federal and State listed native species.

What the draft Basin Plan proposes for the Gwydir

- No additional increase in environmental water held
- Growth in groundwater extraction from potentially connected aquifers (risks draining wetlands)
- Proposal to allow saline groundwater to be discharged into surface water

For a more in depth look at what the Proposed Basin Plan would mean for bird, fish, frog and turtle species at important wetland sites throughout the Basin – see the full brief and references online at: <http://www.irnsw.org.au/>

Gwydir (Big Leather) watercourses.

Gwydir wetlands (Photo Sarah Moles)



Table 1: Compromised environmental targets behind MDBA modelling

Under the draft Plan important wetland areas across the Basin will not receive the necessary water to restore their extent or resilience to withstand further drought and the impacts of climate change.

This table lists all hydrological indicator sites with targets lower than maintaining 100% of current extent in good condition. These targets were published in the Guide,¹ and the Authority has advised that no significant changes have been made to them since then. We have been advised that an updated report, including the final list of environmental targets behind the Proposed Basin Plan, will not be published by the Authority until early January 2012.

Indicator Site	Environmental Targets with explicit allowance for further decline
Gwydir Wetlands (Gwydir Region)	Maintain 30% of the current extent of floodplain vegetation in good condition. Maintain 90% of the current extent of floodplain wetland vegetation in good condition.
Booligal Wetlands (Lachlan Region)	Maintain 80% of the current extent of river red gum communities in good condition. Maintain 80% of the current extent of lignum communities in good condition.
Great Cumbung Swamp (Lachlan Region)	Maintain 95% of the area of permanent and semi-permanent wetland communities in good condition. Maintain 60% of the current extent of river red gum communities in good condition. Maintain 20% of the current extent of floodplain wetland communities in good condition.
Lachlan Swamp (Lachlan Region)	Maintain 75% of the current extent of river red gum communities in good condition. Maintain 65% of the current extent of lignum communities in good condition. Maintain 40% of the current extent of black box communities in good condition.
Macquarie Marshes (Macquarie-Castlereagh Region)	Restore 65% (about 8,000 ha) of water couch, common reed, and cumbungi and mixed marsh communities, recorded as in poor condition in 2008, to good condition.
Hattah Lakes (Murray Region)	Maintain 50% of the current extent of episodic wetlands in good condition. Maintain 80% of the current extent of temporary wetlands in good condition. Maintain 80% of the current extent of river red gum woodland in good condition. Maintain 80% of the current extent of lignum shrubland in good condition. Maintain 50% of the current extent of black box woodland in good condition.
Riverland-Chowilla Floodplain (Murray Region)	Maintain 80% of the current extent of wetlands in good condition. Maintain 80% of the current extent of red gum forest in good condition. Maintain 80% of the current extent of red gum woodland in good condition. Maintain 80% of the current extent of black box woodland in good condition. Maintain 80% of the current extent of lignum shrublands in good condition.
Lower Murrumbidgee River Floodplain (Murrumbidgee Region)	Maintain 95% of the current extent of river red gum communities in good condition. Maintain 65% of the current extent of floodplain wetland vegetation in good condition.
Mid-Murrumbidgee-River Wetlands (Murrumbidgee Region)	Maintain 70% of floodplain wetlands in good condition.

¹ MDBA (2010) Guide to the Proposed Basin Plan: Volume 2 Technical Background Part II, pp 540, 553, 562, 570, 598, 647, 660, 695, 711

Conservation Agreements on Private Land



Lorax Creek - an area protected under a Conservation Agreement on private land (Photo L. Brodie)

By Maya Beretta - Conservation Partnerships Officer, Landscapes and Ecosystems Conservation Branch, NSW Office of Environment and Heritage

Our Australian wildlife is special. Those of us lucky enough to have native vegetation and wildlife habitat on our properties are able to see cryptic animals and to observe the birdlife. Conservation of native vegetation remnants and protecting them in perpetuity is vitally important and will allow future landowners to continue to enjoy seeing our native vegetation and wildlife. Creeks, riparian and wetland vegetation are also areas of beauty which provide wildlife habitat. Protection of these also assists in maintaining or improving water quality and the stability of our riparian corridors.

Building a network of protected areas consisting of private land, national parks and other conservation reserves enables the individual efforts of landowners to spread beyond their properties. Australia's network of protected areas is known as the National Reserve System. Building this system is one of the priorities under the Australian Government's Caring for our Country initiative. The National Reserve System aims to conserve examples of our diverse native ecosystems to ensure the survival of our native flora and fauna through the network of national parks, nature reserves and private land protected through in-perpetuity agreements.

Under the Caring for our Country Initiative, the National Reserve System aims to increase the area of land under formal conservation mechanisms to 10% or more of each Bioregion, and that those areas include the variety of vegetation types and habitats found within the bioregion. While some bioregions in Australia already contribute 10% or more of their land to conservation, some are severely under-represented in the reserve system.

In the NSW South Western Slopes, 2.43% of its area is protected in conservation reserves. In the Cobar Penepplain, that figure is at 2.41% and in the Riverina Bioregion, 3.38% of the area is protected in conservation reserves. This provides opportunities for landholders to participate in the protection of vegetation, flora and fauna habitat and to protect it for future generations.

Many properties have some areas where native vegetation is retained and which provide many benefits for wildlife and the environment. Landholders who have areas of high conservation value that they wish to be protected forever, can enter into a Conservation Agreement with the NSW Minister for the Environment. Wetlands and riparian corridors which support native vegetation are considered high conservation value as they provide a myriad of ecological services that benefit both communities and ecosystems.

Areas protected with Conservation Agreements are able to be included in the National Reserve System. The NSW Office of Environment and Heritage (OEH) has a program to promote private land conservation options to landholders in areas where less than 10% of a bioregion is protected in conservation reserves.

The land is assessed for its conservation values and the part of the property to be protected and managed for conservation is agreed by discussion between the landowners and OEH, and remains the property of the owner. The Agreement goes on the title of the land and remains on the land in perpetuity, ensuring that the current sound management of the area continues. Landholders receive local government rate relief and can access funding for threat abatement works. There may also be other tax concessions.

For more information about the Conservation Partners Program, check out our website which includes a DVD about the program: <http://www.environment.nsw.gov.au/cpp/ConservationPartners.htm>

You can also download the handbook 'Conservation Partnerships – a guide for landholders'.

If you wish to speak to someone about Private Land Conservation Options such as Conservation Agreements on your land, contact Maya Beretta, Conservation Partnerships Officer on (02) 6229 7037 or email maya.beretta@environment.nsw.gov.au

Causes, impacts and ways to manage exotic plant invasion along the River Murray

Dr Jane Catford

Dense weed infestations are a familiar sight along rivers the world over, and the River Murray is no exception. Exotic (non-native, introduced, alien, non-indigenous) species account for about 40% of the plant species found along the Murray and can constitute up to 50% of the vegetation cover in floodplain wetlands. It is no surprise, then, that riparian zones are considered to be among the most invaded types of ecosystems, but should we be concerned?

A shift in the composition of vegetation communities can have a marked effect on the structure and function of ecosystems, and can hamper the ability of an ecosystem to maintain "natural" ecosystem processes and services. Wetland plants improve water quality and provide crucial habitat and food for birds, fish, turtles and other animals. Changes to wetland flora will impair the function of riverine wetlands, estimated by the Australian Conservation Foundation to contribute \$2.1 billion/year to local regions. Along the Murray, native plant species are a diverse mix; they possess different growth forms, life histories and reproductive strategies. In contrast, the exotic species pool is dominated by forbs (e.g. daisies, thistles), annuals, and species that exclusively use sexual reproduction and are adapted to drier, terrestrial conditions.

While most exotic species will be non-invasive (i.e. their abundance and rates of spread are low), a portion will be invasive and dominant. Invasive species may outcompete native species, potentially leading to a decline in ecosystem diversity and stability and a reduced capacity for flora and fauna to adapt to other environmental stresses, like climate change. Of all the exotic species in a community though, the ones of greatest ecological concern would be those that transform the environments that they invade. Sometimes called transformers or ecosystem engineers, these species can, for example, increase rates of sedimentation to create suitable habitat for themselves, draw down the water table to a level that only they can reach,

or increase the intensity of bushfires in a way that gives them a competitive advantage. Invasion is set to increase as climate change escalates and as more and more plants are moved around the world for agriculture, horticulture and for use in gardens. It is therefore essential that management strategies that limit (and hopefully reduce) exotic plant invasion in riparian ecosystem are used. To identify the most effective weed control strategies, we must first determine the reasons for invasion; we can then target these invasion pathways in management.

While there are many competing ideas to explain riparian invasion, research that colleagues and I have recently undertaken suggests that modification of the natural flow regime is a key driver of invasion along the River Murray. Flow regulation has changed the magnitude, duration, timing, frequency and variability of flooding and drying along the Murray. For example, floods that would have occurred every 20 years are now occurring every 32 years, and median flows to the sea are reduced by 71%. Native species are adapted to natural environmental conditions, so changes to these conditions through – in this case – flow regulation can reduce their abundance, paving the way for exotic invaders.

As part of a study published in the *Journal of Applied Ecology*, we surveyed plant communities and modelled flood histories of 24 floodplain wetlands along the NSW-Vic border between Albury and Echuca. Wetlands that were impacted most by flow regulation were found to have the highest cover of alien plants and the lowest cover and diversity of native plants. In particular, by reducing the magnitude of peaks flows, river regulation has provided conditions that favour alien plants at the expense of native ones.

Given that the chief driver of invasion in these riparian wetlands is flow modification, provision of environmental flows that mimic a more natural flooding regime should help redress the balance between native

and alien species. Our work suggests that environmental water should be used to augment natural floods that typically occur in spring. Increasing the size of mid-range floods (i.e. those that occurred every 10-20 years under pre-regulation conditions) in particular will kill most of the exotic species and encourage growth and reproduction of native plants. Water regime management presents a novel way to control exotic plants in river ecosystems, which are less suited to chemical herbicides and mechanical weed removal.

While flow regulation was the overriding driver in our study, evidence suggests that dispersal of exotic plants by humans is also important. Invasion was concentrated around towns and roads, and most of the species found in the wetlands would have originally been introduced for agriculture and landscaping. Selecting native garden plant species over exotic ones, instating buffer strips between farms and riverine ecosystems and disposing of garden and compost waste appropriately will also help to reduce invasion along the Murray.

For more information, please contact Dr Jane Catford, School of Botany, The University of Melbourne, Email: catfordj@unimelb.edu.au

Catford, J. A. & Downes, B. J. (2010) Using multi-scale species distribution data to infer drivers of biological invasion in riparian wetlands. *Diversity and Distributions*, 16, 20-32. <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2664.2010.01945.x/abstract>

Catford, J. A., Downes, B. J., Gippel, C. J. & Vesk, P. A. (2011) Flow regulation reduces native plant cover and facilitates exotic invasion in riparian wetlands. *Journal of Applied Ecology*, 48, 432-442. <http://onlinelibrary.wiley.com/doi/10.1111/j.1472-4642.2009.00631.x/abstract>



A River Murray floodplain wetland infested with Delta arrowhead, Cobrawonga, Vic. (Photo Jane Catford)



Jane Catford in a "healthy" River Murray wetland, Cobrawonga, Vic. (Photo Dru Marsh)



(Photo Linda Nadge)



Broken Hill workshop presenters and participants. Emma Hollows, IRN Coordinator, Bruce Campbell - Dept. SEWPaC, Bev Smiles - IRN President, Sam Davis - NSW DPI (Fisheries), Dennis Wilson - Broken Hill; Back L-R: Russell Grant - Western CMA, Barney Stevens - Darling River Action Group.

Caring for critical aquatic inland habitats – Report from Broken Hill workshop



The Darling River at Wilcannia (Photo E Hollows, September 2011)



Menindee Lakes (Photo Linda Nadge)

IRN recently held a workshop in Broken Hill to kick off the Caring for our critical aquatic inland habitats project. The workshop was the first in a series funded through the Federal Caring for Our Country program.

The focus of the project is on the importance of maintaining healthy, functioning and resilient freshwater ecosystems and the changes that are needed in water management to secure these precious inland river and wetland systems into the future.

On a day of wild, stormy weather in Broken Hill, community members from Broken Hill, Wilcannia, White Cliffs and Menindee, heard from a range of presenters. Linda Nadge, Executive Officer of Regional Development Australia Far West, gave an update on the proposal to list Menindee Lakes as a Ramsar site – the project is currently awaiting a formal response from the NSW Government expressing support or otherwise. Russell Grant, Acting General Manager and Operations Manger of Western Catchment Management Authority, provided an overview of the CMAs activities related to riparian

management – both educational and on-ground projects. Of particular interest to IRN was the 'Flying the Darling' Project – which involves high resolution aerial photography being taken of the Darling River in order to identify important refuge pools in dry times, so that efforts can be focused on securing these areas in the future.

Sam Davis, Senior Conservation Officer with NSW Department of Primary Industries – Fisheries, gave an engaging presentation about the plight of our native fish in the Darling River. Barriers to fish passage and lack of snags available as instream habitat were two key problems hindering native fish populations in the Darling, and Sam provided an update on re-snagging and monitoring projects currently underway in the area. Bruce Campbell, Director of Northern Basin Water Delivery from the Federal Environment and Water Dept., was able to introduce the role of the Commonwealth Environmental Water Holder and discuss environmental watering projects in the Northern Basin including those to improve fish passage down the lower Warrego into the Darling.

The workshop discussion sessions were a chance for all participants to share their stories about important local sites along that part of the Darling River system, how the health of these sites has changed over the years, and what they were concerned about in relation to the health of their river. Common themes emerged about concerns about river flow quality and quantity and native fish populations – with many participants noting that the river doesn't flow as often, or for as long, as high and as clean, as it used to and that many once-common native fish species are no longer spotted at popular local fishing spots.

The next workshops will be held in Dubbo, Tamworth and Wagga Wagga in early 2012. Thank you to those that have already registered their interest – IRN will be in touch with more information early in the new year.

To register your interest or to find out more about these events check the IRN website at <http://www.irnsw.org.au/> or contact IRN via coordinator@irnsw.org.au or (02) 8580 6609.



Darling River at Tilpa (Photo E Hollows, September 2011)

NSW Water Sharing Plans for Unregulated Rivers and Alluvial Aquifers

The NSW Office of Water (NOW) has dragged its feet on getting most river systems in NSW operating under rules of the Water Management Act 2000. Any water source without a Water Sharing Plan (WSP) is still managed under the 1912 Water Act!

With the imminence of the Murray-Darling Basin Plan, there has been a sudden rush of activity to get all inland water sources covered by WSPs. This has led to some very ordinary outcomes for the NSW water reform process with an increased reliance on the Federal Government to pay for any real benefits to river and ecosystem health.

This approach is a major threat to the future health of NSW rivers and connected groundwater systems.

The Basin Plan will not be able to improve water availability for the environment until 2019 unless the purchase of environmental water

continues. New WSPs under the NSW legislation could achieve better outcomes as early as next year. The latest set of WSPs for the unregulated Murrumbidgee, Namoi and Barwon-Darling river systems are basically continuing 'business as usual' for another 10 years.

The protection of low flows and pools in unregulated rivers is critical both for groundwater connectivity and the survival of water-dependent species and ecosystems during dry times. The lack of research into aquatic biodiversity in these river systems is notable through the lack of available information on conservation values. It is harder to appreciate the things we don't know we have. The precautionary principle, one of the fundamental principles of ESD, is about making good judgments in the absence of information. The current tranche of WSPs do not meet the objectives of ecologically sustainable development.

Macquarie River to Orange Pipeline Proposal

IRN has joined a coalition of groups in the Orange and Region Water Security Alliance to oppose Orange City Council's proposal to pump water from the Upper Macquarie River for town water supply.

The proposal will threaten the pools and low flows of the river reaches above Burrendong Dam. The river flows through very steep, rugged country of vegetated ridgelines with deep pools and riffles in a near natural state. This section of the river has been classified as high conservation value.

The Upper Macquarie is well loved by recreational fishers because of its remoteness and good native fish population. This area has become one of the keys sites for re-establishing sustaining populations of the nationally threatened Trout Cod under a recovery plan. The vulnerable Murray Cod is also present in these river reaches.

A plan to construct a 36km pipeline to Orange and pump town water supply out of deep pools from this section of the unregulated river is not ecologically sustainable and should not be approved.

The Water Alliance includes Friends of the Macquarie, Orange Ratepayers Association, Summerhill Creekcare, Inland Waterways Rejuvenation Association, Environmentally Concerned Citizens of Orange and other fishing groups.

A number of more sustainable options for securing Orange's water supply are available and the community is working to have these considered by Council.



Upper Macquarie at low flows (Photo Ken Smith)

IRN Update - Changes and Activities in 2012

There are a few changes afoot with IRN management committee and staffing arrangements.

At the 2011 Annual General Meeting on 15 September 2011, Anne Reeves stood down as President and handed the reins over to Bev Smiles from the Central West Environment Council.

Anne has taken on the role of Secretary while Diane Latta from National Parks Association has taken on the financial tasks as our new Treasurer. The IRN 2012 Committee consists of Judy Messer and Lorraine Cairnes representing the Nature Conservation Council of NSW; Chris Daley from the Sydney Branch of the Wilderness Society; Jonathan La Nauze from Friends of the Earth; and Arlene Harriss-Buchan and Ruchira Talukdar from Australian Conservation Foundation.

IRN thanks Anne for her huge contribution as President, and Dietrich Willing for his able assistance as Treasurer since IRN became

an incorporated body in 2008.

We sadly have to announce that Emma Hollows is leaving us at the end of the year to embark on the next exciting stage of her life. IRN has enjoyed the benefit of Emma's cheerful manner along with her considerable skills base and knowledge of environment and water issues.

While we wish Emma all the best for a bright and successful future we would like to welcome another Emma into the position of co-ordinating the many activities that IRN undertakes.

Emma Clegg will be joining us at the start of 2012 and will be contactable on the same phone number and email address. IRN will continue to function with the same website and office arrangements.

While we are all seriously immersed in the process of achieving a good environmental outcome through the Murray-Darling Basin Plan, IRN has been busy with many other tasks

relating to community networking, engaging in NSW Government water reform processes and generally working for improved health in our inland rivers.

Our series of upcoming workshops will help in the sharing of knowledge and forming new partnerships with communities which live and work in inland NSW. All aspects of the water issue and river ecosystems seem to be highly complex and difficult to understand and manage. The reality is that we and all other living things on earth cannot survive without water. So our ability to share it fairly between human needs and ecological needs will be an ongoing challenge.

IRN plans to develop a simple language tool to explain the intricacies of water management, water sharing, water reform and water for the environment.

IRN wishes all supporters a happy festive season and an energetic start to the new year.

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Opinions expressed by the authors are their own and do not necessarily represent the policies or views of IRN.



About the Inland Rivers Network

Inland Rivers Network 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.

If you support the production of the IRN News and would like to see the newsletter and the work that IRN does continued into the future, you are invited to send a donation.

IRN steering committee member organisations:

- Australian Conservation Foundation
- Central West Environment Council
- Coast and Wetlands Society
- Friends of the Earth
- National Parks Association of NSW
- Nature Conservation Council of NSW
- The Wilderness Society Sydney



CARING
FOR
OUR
COUNTRY

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