

INLAND RIVERS NETWORK



News

A Quarterly Newsletter of the Inland Rivers Network

www.irnsw.org.au

November 2000 Volume 5 Number 3

MDBC POLICY INITIATIVE

The Murray Darling Basin Commission is circulating two important documents, both with a deadline for comment of 5 December 2000. Copies are enclosed with this newsletter.

"Integrated Catchment Management in the Murray-Darling Basin 2001-2010" challenges us to re-think current practice and process - particularly through development and implementation of targets for catchment health.

"Basin Salinity Management Strategy 2001-2015" reflects the growing awareness of increasing salinity and the urgent need for action to halt further degradation of our water and our lands.

These papers follow on from a series of earlier publications, including the Cap Review and the Salinity Audit. Important ancillary reading is the just released COAG Natural Resource Management communique (see page 18 of this newsletter) for some national context; and the NSW Salinity Strategy which is focussed on State issues.

The political mood is at last building for more integrated frameworks to deal with specific aspects of water and catchment management. It is important that the current opportunities are effectively used. In doing this, it is critical that the ecological elements that underpin sustainability are effectively incorporated into policy and process. More detailed analysis of these papers will be undertaken over the next few weeks. If you have particular points you would like to see included in an overall IRN response please send them in to us no later than 24 November.

NATIVE FISH, RESTOCKING, AND TROUT: A RECIPE FOR DISASTER?

Stocking the waterways of the Murray-Darling Basin with hatchery-reared freshwater fish is common practice. In NSW, stocking is a core activity of NSW Fisheries, who operate two dedicated hatcheries as well as three research centres capable of producing large amounts of juvenile fish. But is fish stocking a responsible and sustainable practice? For example, consider the following:

- Despite NSW Fisheries stocking over 411,000 Silver Perch in 1999/2000, this has in all but one case failed to establish a self-sustaining population in the wild. In fact, NSW Fisheries own scientific committee stated that this practice may be potentially harmful to the genetic integrity of the wild Silver perch population.
- In this same period, NSW Fisheries helped stock over 4.8 million brook, brown and rainbow trout into dams and waterways throughout NSW. These are introduced species that compete with, prey upon, and/or spread disease amongst native fish species.
- New research by Don Gartside and Andy Moore from Southern Cross University is investigating the restocking of one of Australia's most endangered fish, the Eastern Freshwater Cod. This research has identified some significant conservation issues arising from stocking.

**Ammendments to NSW *Water Management Bill* - More bad news for NSW freshwater fish
Platypus prefer Gum Trees - Restocking the Eastern freshwater cod
Mistaken assumptions in water management - Call for water management website
Buying votes and building dams on the Burnett - Sold down the river
IUCN on large Dams and Asian Rivers - Snowy River to be reborn
World's freshwater ecosystems in trouble - Freshwater aquatic reserves**

IRN NEWS is available at our website www.irnsw.org.au

- Since the last issue of IRN News, two more freshwater fish species have been listed as vulnerable in NSW, and a freshwater invertebrate species has been proposed as endangered.

Whilst obviously supporting recreational angling and aquaculture, the sort of stocking policies currently accepted as normal cannot be justified from a conservation viewpoint. It is time that agencies such as NSW Fisheries took their management and conservation roles seriously and reviewed freshwater stocking practices.

CHANGES AT IRN

This issue of IRN News marks a watershed in the history of the Inland Rivers Network. Dr Stuart Blanch has recently vacated the position of IRN Coordinator to become the Healthy Rivers Coordinator for the Australian Conservation Foundation. Fortunately, Stuart has not totally abandoned IRN, having taken a position on the steering committee.

The credit that Stuart brought to the Inland Rivers Network through his professionalism and integrity cannot be understated. Anyone who has the good fortune to work with him would be well aware of his commitment and enthusiasm, not to mention his almost indecent good nature and patience. We would all like to thank him for his hard work, and wish him the best in his new job.

We can now welcome Greg Williams as the new IRN Coordinator. Greg has been working at the Royal Melbourne Institute of Technology as a lecturer in natural resource management and ecology. Greg is looking forward to representing the conservation movement in the water reform process.



Above: Dr Stuart Blanch at the Way Forward on Weirs Conference, August 2000.

CONTENTS			
<i>Editorial</i>	1	<i>The Way Forward on Weirs Conference Report</i>	10
<i>Water News</i>		<i>Water Reform News</i>	
Snowy River to be reborn	3	Water Legislation a test of this Government's commitment	13
World's Freshwater Ecosystems in trouble	3	MDBC Cap Review	14
China agrees to protect Asia's rivers	4	Sold down the river	14
IUCN position on large dams	4	Buying votes and building dams in the Burnett	15
Healthy Rivers swim	5	Price of water and environmental outcomes	16
<i>Threatened freshwater biodiversity</i>		Water management website	17
More bad news for NSW freshwater fish	6	Mistaken Assumptions	17
Restocking fish for conservation: the Eastern freshwater cod	6	COAG and Natural Resource Management	18
Establishing freshwater aquatic reserves in NSW	7		
Platypus prefer gum trees	8	<i>Letter to the Editor</i>	19
Resnagging the Murray River	9		

WATER NEWS

SNOWY RIVER TO BE REBORN

An agreement between Victorian Premier Steve Bracks and New South Wales Premier Bob Carr in October will lift Snowy River natural flows by 28 per cent within 15 years. Currently, Snowy flows are down to 1 per cent of their natural levels at Jindabyne - where the river flow is the lowest. The deal also guarantees \$300 million dollars to an independent funding body to oversee the 'purchase' of water efficiency savings in the Murray and Murrumbidgee River valleys.

Speaking from the Jindabyne launch of the deal, Australian Conservation Foundation President Peter Garrett said "Bob Carr and Steve Bracks deserve our praise and congratulations for their negotiation of this landmark agreement, along with Independent Victorian MP Craig Ingram. The Snowy Valley community has shown great patience and persistence."

The Snowy River was once a mighty waterway that carried torrents of melting spring snow from the Kosciusko National Park in NSW to the Victorian coast near Orbost. The Snowy hydroelectrical scheme changed all that, diverting 99 per cent of upper catchment flows to generate hydro power, before releasing this water into the Murray and Murrumbidgee Rivers, to be used in irrigated agriculture.

Mr Garrett said " This deal has achieved a win-win outcome. The Snowy will be restored without reducing flows from the Murray and Murrumbidgee rivers - South Australians will be pleased. The deal targets water efficiency savings so inland irrigators will not lose access to the water they seek."

ACF is now urging the Commonwealth government to back the deal and to match the financial commitment from Victoria and New South Wales.

Source: Australian Conservation Foundation website: www.acfonline.org.au

Craig Woodfield, Inland Rivers Network

WORLDS' FRESHWATER ECOSYSTEMS IN TROUBLE

A report released recently by the World Resources Institute (WRI) reveals that the world's freshwater systems are so degraded that their ability to support human, plant and animal life is greatly in peril. As a result, many freshwater species are facing rapid population decline or extinction, and an

increasing number of people will face serious water shortages.

The report, "Pilot Analysis of Global Ecosystems (PAGE): Freshwater Systems," says that while many regions of the world have ample freshwater supplies, four out of every 10 people currently live in river basins which are experiencing water scarcity. By 2025, at least 3.5 billion people or nearly 50 percent of the world's population will face water scarcity.

Further analysis of existing freshwater studies reveals that more than 20 percent of the world's known 10,000 freshwater fish species have become extinct, been threatened, or endangered in recent decades. In the United States, which has the most comprehensive data on freshwater species, 37 percent of freshwater fish species, 67 percent of mussels, 51 percent of crayfish and 40 percent of amphibians are threatened or have become extinct.

According to the PAGE report, much of the degradation of the world's freshwater systems is due to habitat destruction, the construction of dams and canals, introduction of non-native species, pollution, and over-exploitation.

It is estimated that dams, diversions or canals fragment almost 60 percent of the world's largest 227 rivers. The only remaining large free-flowing rivers in the world are found in the tundra regions of North America and Russia, and in parts of Africa and South America. Studies of the introduction of non-native fish in Europe, North America, Australia, and New Zealand, reveal that 77 percent of them resulted in the drastic reduction or elimination of native fish species.

The PAGE report on freshwater systems is the first of five technical reports that will be released in the next six months. Other reports will cover agro-ecosystems, coastal areas, forests, and grasslands. Taken together, these reports are the first such comprehensive assessment of the state of the world's ecosystems.

The World Resources Institute (WRI) is a Washington, DC-based center for policy research that provides objective information and practical proposals for change to foster environmentally sound and sustainable development. For more information, visit WRI's Website at: <http://www.wri.org/wri/media/>

Source: Asia Pacific Forum of Environmental Journalists

Craig Woodfield, Inland Rivers Network

CHINA AGREES TO PROTECT ASIA'S RIVERS

A resolution to protect Asia's major river systems was adopted at the 2nd World Conservation Congress by the World Conservation Union (IUCN) held in Amman, Jordan, October 4 - 11th. The resolution was sponsored by the Berkeley-based International Committee of Lawyers for Tibet (ICLT) with co-sponsors the Sierra Club, the Wilderness Society of Australia, and non-governmental organizations (NGOs) from India, Nepal, and Vietnam. "The resolution represents an important first step in getting the Chinese involved in cooperative environmental efforts," said ICLT delegation chairperson D'Arcy Richardson, "and in getting them to sit down with Tibetans to negotiate an agreement."

The resolution recognizes that overexploitation or misuse of Asia's major river systems could negatively affect these systems as well as the livelihoods of a significant proportion of the world's population. It sets up a process to evaluate and recommend mechanisms for conservation and sustainable management of these waters for the common interest of the riparian countries.

The resolution — a compromise from its original language — was hammered out, in face-to-face negotiations, between Chinese government delegates and the sponsors, including Tibetan representatives. "While the language of the resolution was weaker than what we wanted," Richardson said, "we preserved the ability of the Tibetans to participate thus lending legitimacy to their ownership of the resources in Tibet. We hope to build the case that regardless of Tibet's political status, Tibetans should still have the right to control their own resources. As it now stands, the environmental relationship between China and Tibet is one of a colony where resources are extracted and the benefits accrue to the occupier, not the local people."

The Congress was the largest environmental gathering of the millennium, bringing together over 2,000 delegates from all over the world. The focus of the Congress was "EcoSpace" — the concept that environmental issues cross national boundaries and need to be dealt with cooperatively on an international scale. "One of the objectives of our resolution was to bring the Chinese into a dialogue about what happens with the rivers that flow from the Tibetan Plateau," said ICLT delegate Tashi Tsering. "Up to this point, China has been unwilling to participate in other international mechanisms that have been created, such as the Mekong River Commission, but we still believe that environmental issues are the best place to search for common ground between China and Tibet."

"As a Tibet advocacy organization, IUCN is an important forum for us," Tsering said. "It's one of the few places where Tibetans have a voice in an international arena, where we can advocate for ourselves."

IUCN is a unique international forum, where governmental and non-governmental delegates have equal status, thus allowing Tibetans who are members of NGO's to be part of the discussion and decision-making process. Other ICLT delegates to the Congress were Lhadon Tethong with Students for a Free Tibet, New York and Lorne Stockman, coordinator of the International Tibet Support Group Network based in London. Stockman had earlier in the year represented ICLT at the Second World Water Forum & Ministerial Conference in The Hague.

"The resolution," Richardson said, "recognizes that environmental problems need regional and local collaboration of all parties, leaving room for Tibetan participation. However, the success of the resolution will depend, in large part, on the will of IUCN members and the Secretariat to carry out its mandate. There is strong support for Tibet from within the NGO-IUCN community. With this resolution, and the one on Yamdrok Tso passed at the first IUCN Congress in Montreal in 1996, we have started to build precedents that we can use in the future — hopefully, to help bring the Chinese to the table to negotiate a peace agreement with the Tibetans."

Anne Reeves, National Parks Association

Source: The International Committee of Lawyers for Tibet
www.tibetictl.org.

IUCN POSITION ON LARGE DAMS

A Resolution Submitted by the Nature Conservation Council of NSW to the IUCN World Conservation Congress, Amman, Jordan, October 2000

Endorsed as below:

"Ecological Management Issues Relating to Large Dams"
RECOGNIZING that the Mission Statement of IUCN-The World Conservation Union commits the Union to ensuring that any use of natural resources should be ecologically sustainable;

RECOGNIZING the increasing importance that the international community places on ensuring that any use of natural resources should be ecologically sustainable;

RECOGNISING that in all societies, riverine ecosystems are valued for their ecological, economic, social and cultural values by both local communities and the wider society;

RECOGNISING that in all societies, large and small dams are built to meet human needs such as drinking water supplies, food and fibre production, flood control, and/or energy generation;

RECOGNISING also that such benefits to society have been accompanied by a wide range of ecological, economic and social costs;

RECOGNISING that the solutions to the many almost irreversible problems such as the loss of biodiversity and adverse impacts on ecological processes, (including site specific impacts on riverine and aquatic ecosystems, water quality and soils), will require major intellectual, economic and social efforts by governments, land managers and the wider community;

NOTING that there has been increasing worldwide efforts to address the problems arising from inappropriate construction and/or management of dams;

1. Calls upon all governments to:

(a) Recognise the important role of natural ecosystems in contributing to sustainable development by

- (i) ensuring that all major development investment, such as dam construction, will seek to conserve and enhance the ecological services provided by river basin ecosystems and
- (ii) by avoiding any actions that diminish such values;

(b) Recognise the importance of biodiversity and promote its conservation by ensuring that dam projects will be re-assessed if they are shown to have a high probability of having a significant detrimental effect on species diversity;

(c) Recognise the need for the precautionary approach because of the high degree of uncertainty associated with dam development actions affecting river basin ecosystems, dams and associated land use activities;

(d) Ensure effective public participation in planning, design and management of dams through open processes that ensure there will be a full sharing of available information, especially with local communities and institutions, including identification of knowledge gaps and confidence levels;

(e) Adopt an adaptive management if, notwithstanding the above reservations, a decision is made to construct a dam by ensuring that design features will include the capacity for flexible adjustment to meet future environmental needs including environmental flows, water quality, and wetlands sustainability;

(f) Promote the development of national, and sub-national where appropriate, legislative and policy frameworks to ensure that all use of river basin ecosystems will be ecologically sustainable.

2. Requests the Director-General to ensure that the recommendations outlined above are given a high priority in the 2001-2004 Programme.

Dr Judy Messer, Nature Conservation Council of NSW

HEALTHY RIVERS SWIM

Marathon swimmer Tammy Van Wisse has just embarked on an awareness raising swim along the length of the Murray River. Starting at Corryong on November 5th, Van Wisse intends to finish the 2,450 kilometre swim on Australia Day 2001. Heavy flooding delayed the start of the swim, but has also assisted the swimmer by providing a strong current. The swim will be used to highlight environmental issues in the Murray River. Regular progress can be viewed at www.Bgreen.com.au

Craig Woodfield, Inland Rivers Network

QUOTE OF THE MONTH

It is clear from submissions to the review that there is community disquiet over the state of the Basin's rivers. There is a strong desire to see an improvement in river health. It is also clear that further abstractions, anywhere in the basin, will decrease the health of the river ecosystem.

Review of the Operation of the Cap, MDBC, November 2000

SPECIAL NOTE: BEST WISHES FOR A SPEEDY RECOVERY TO NEVILLE SCHRADER OF PARKES

Latest reports are that Neville is on the mend after a nasty episode of kidney failure. Just stick to that yucky diet Neville, because your contribution to the Lachlan River Management Committee and on other natural resource and nature conservation issues is much needed!

THREATENED FRESHWATER BIODIVERSITY

MORE BAD NEWS FOR NSW FRESHWATER FISH

Two more NSW native freshwater fish have been listed as Vulnerable under Schedule 5 of the Fisheries management Act 1994: the Southern Pygmy Perch (*Nannoperca australis*) and Silver Perch (*Bidyanus bidyanus*). This brings the total of threatened freshwater fish in NSW to 6. As reported in the last issue of IRN News, the Murray Hardyhead (*Craterocephalus fluviatilis*) has also been nominated as Endangered, but has yet to be listed.

The Fisheries Scientific Committee found that the causes of decline in Southern Pygmy perch are likely to include:

- spawning failures due to cold water releases from dams;
- predation by, and competition with, introduced species such as redfin perch and gambusia;
- alienation of floodplain habitats by flood mitigation works such as levees;
- seasonal flow reversal; and
- loss of aquatic vegetation.

The story with Silver perch is remarkably similar, with causes in decline likely to include:

- spawning failures due to cold water releases from dams;
- predation by, and competition with, introduced species such as redfin perch and gambusia;
- construction of barriers to migration and recolonisation such as weirs and dams without fishways;
- increased egg mortality in weir pool environments caused by lack of water movement; and
- EHN disease, which is carried by redfin perch.

Significantly, the committee also found that the widespread stocking of hatchery reared Silver perch for recreational fishing and aquaculture is potentially damaging to the genetic integrity of the wild population, and has in all but one case failed to establish a self-sustaining population in the wild.

A freshwater snail species has also been proposed as an endangered species in NSW. The river snail *Notopala sublineata* is considered to be extinct throughout its natural range, with only a few populations surviving in irrigation pipelines. Once again, hydrological modifications are considered the primary reason for this species decline.

Finally, whilst not strictly a freshwater species, Buchanans fairy shrimp (*Branchinella buchananensis*) has also been proposed as a vulnerable species. This relative of the brine shrimp is only found in a few salt lakes in inland Australia,

including Gidgee Lake, 130 kilometres north-west of Bourke. The Fisheries Scientific Committee suggests that any number of development activities, such as mineral extraction, could lead to the extinction of this species.

Craig Woodfield, Inland Rivers Network

RESTOCKING FISH FOR CONSERVATION:

THE EASTERN FRESHWATER COD

Restocking depleted or endangered species of fish with hatchery produced stock potentially is a very valuable conservation measure. Restocking is increasingly seen as one of the main methods of achieving the objectives of restoring depleted populations to former levels of abundance and reintroducing fish to areas from which they have disappeared.

However, as with all artificial approaches to restoring natural systems, it is important to understand the implications of these techniques to ensure the best possible outcomes.

Benefits

Use of hatchery produced fish for restocking back into the wild for conservation purposes has several advantages. Large numbers of individuals can be produced in a relatively short period of time, providing the capacity to increase population size much more rapidly than could be achieved by natural growth. Restocking programs also can provide flexibility. They can be tailored to areas that have been assessed as having the highest conservation priorities or the best chances of success.

These advantages are achieved, however, by overcoming biological restraints which act in the wild. Natural levels of mortality of eggs and juvenile fish are prevented by 'artificial' fertilization of eggs to achieve high fertilization rates. Loss of fertilized eggs and larvae from fungal and other infections is prevented by chemical treatment and maintenance of high water quality conditions. Natural mortality through predation is prevented by rearing larvae and juveniles in isolation from larger fish and other species. Starvation and competition for resources in larvae and juvenile fish is limited by regular feeding.

Negative Effects

While these are fairly common procedures in hatchery restocking programs, they can have unintended and negative effects on survival of restocked individuals and populations in the wild which may only become apparent over time.

Domestication

One of the potential genetic effects of hatchery restocking programs is domestication. Domestication is where the genetic composition of the hatchery raised population changes compared to the source population due to the artificial hatchery environment selecting traits that confer an advantage in the artificial environment. Reduced fitness of hatchery raised fish in the natural environment has been observed in Atlantic salmon. They displayed attributes such as reduced juvenile stamina and survival, lower resistance to disease, weaker territorial behaviour, loss of concealment ability, weaker homing ability and less active spawning behaviour.

Loss of Genetic Diversity

Another major risk of captive breeding programs for conservation restocking is loss of genetic diversity. Loss of genetic diversity in these programs usually is due to genetic drift or to inbreeding. Genetic drift is accelerated when small numbers of fish are used for breeding and results in loss of rare alleles and reduced heterozygosity.

Release of tens of thousands of hatchery reared individuals provides no guarantee against loss of genetic diversity. In a study of hatchery produced prawns, although the spawning tanks held hundreds of breeders, it was calculated that the actual number of individuals contributing offspring was between two and four. Over seven generations, dramatic declines in genetic diversity occurred.

Inbreeding occurs when closely related individuals are used in breeding programs such as may occur when hatchery reared offspring are used for breeding. It can result in inbreeding depression and increased expression of deleterious alleles. These effects can be expressed as reduced fecundity, decreased fertilization rates, increased larval and juvenile mortality and increased numbers of deformed offspring.

A number of studies have demonstrated that significant loss of genetic diversity has occurred in hatchery programs in fish. Species in which this has been observed include brown and rainbow trout, cutthroat trout, Atlantic salmon and bream.

Loss of genetic diversity is believed to reduce the ability of populations to survive normal environmental variation, disease and competition with other individuals and species. However, the ultimate effect of the release of hatchery reared fish on the fitness and survival of the population in the wild will vary depending on the genetic structure and architecture of the wild population, the mating behaviour and physiology of the species and the husbandry practices used.

Restocking the Endangered Eastern Freshwater Cod

As part of the conservation management plan for the endangered eastern freshwater cod, NSW Fisheries has

funded a team from Southern Cross University to study the genetics of remnant and restocked populations and of fish used in the captive breeding program using microsatellite DNA.

Eastern freshwater cod was once very common and widespread throughout its range in the main river systems of northeastern NSW. Natural populations now are restricted just to the Nymboida River, a tributary of the Clarence River. Reasons for this severely restricted distribution are not well documented, but are thought to involve degradation of habitat due to changes in land use practices and fishing pressure. Water quality appears to have declined in many areas of the cod's former distribution due to land clearing, agricultural practices and rural residential development. Fishing now is completely banned and large fines apply to illegal catches.

The biological characteristics of eastern freshwater cod make it especially vulnerable to depletion and slow recovery. It is a relatively slow growing and long-lived species. It is at the top of its food chain and is the top predator in its natural environment. Anecdotal evidence suggests it is highly territorial.

Restocking of this species into various parts of its former range has been occurring now for more than a decade. There is strong support from community groups and fishing clubs to restore this species to its former status as a trophy sportfishing catch.

The aims of the present project are to provide information on the genetic composition of remnant populations so that breeding stock can be selected to maximise the chance of retaining natural genetic diversity and to enhance the success of captive breeding and restocking program in maintaining as much of the natural genetic diversity as possible.

Don Gartside and Andy Moore, Centre for Coastal Management, Southern Cross University.

For any information contact Don Gartside on 02 6620 3249 or e-mail dgartsid@scu.edu.au.

ESTABLISHING FRESHWATER AQUATIC RESERVES IN NSW

The loss of biodiversity is the single most important environmental issue facing the nation. Freshwater ecosystems are no exception, with one third of freshwater fish classified endangered, vulnerable or rare, and six threatened species in NSW. Rapid declines in abundance and distribution of many freshwater species have occurred throughout Australia's rivers since European occupation. One of the major reasons for this decline has been habitat alteration and destruction due to a number of impacts, including desnagging, destruction of river banks and riparian

zones, and river regulation resulting from the effects of dams and weirs. The conservation of fish habitat, particularly habitat critical to a species' survival, is essential for the survival of threatened species. Yet despite the overwhelming need to protect threatened and critical habitat, **no freshwater reserves have been established in NSW or throughout the Murray- Darling Basin.**

State and National governments have made a number of commitments for the establishment of a Comprehensive, Adequate and Representative reserve system of all the ecosystems in Australia, focussing particularly on those under-represented in the current reserve system. Yet despite this recognition of the serious nature of the problem and the commitments made, the key area of freshwater ecosystems has been ignored. The *Intergovernmental Agreement on the Environment*, signed in 1992 by State and Federal governments, specifically mentions the need to establish freshwater reserves to fulfil Australia's obligations under the *United Nations Biodiversity Convention 1992*.

No aquatic reserves or critical habitat have been declared in NSW inland rivers by NSW Fisheries, despite specific provisions in legislation. The *Fisheries Management Act 1994* (Part 7 Division 2 (sections 194- 197)) provides for the establishment of aquatic reserves "to enhance the protection of fish and fish habitat" (s194 (2)). Aquatic reserves may be established to:

- Prohibit or regulate the taking of fish
- Provide for management and protection
- Classify areas within a reserve for different uses (s 197).

In addition, the NSW Biodiversity Strategy and the National Reserve System program provide a greater policy imperative for creating reserves. Legislative backing will soon exist through the Draft NSW Aquatic Biodiversity Strategy, which should specify aquatic reserves as a key river conservation tool.

Why have NSW Fisheries failed to establish freshwater reserves? The public clearly recognises the importance of the National Parks system for terrestrial biodiversity conservation. Yet scientists report that freshwater biodiversity is disappearing at a greater rate than terrestrial biodiversity worldwide. Insufficient funding and lack of political will to potentially impinge on recreational angling access to rivers has hamstrung the efforts of NSW Fisheries staff. Adequate legislation and frameworks exist, and NSW Fisheries has been working on establishing a number of marine protected areas. Further, the need for such conservation is readily evident. It is difficult to see why the government has done nothing to rectify this situation. Accordingly IRN is preparing an issues paper entitled '*Freshwater Reserves for Biodiversity Conservation in Inland Rivers*'. This paper will focus on the urgent need for the establishment of freshwater reserves for biodiversity conservation, and the necessity of ensuring government

commitments are finally met in light of national and state obligations. Current frameworks, policies and legislation will be examined in detail, as well as considering the current reserves systems in place for terrestrial and marine environments, to provide a framework of the establishment of such reserves. Finally, recommendations will be made regarding reserve selection, establishment and management in an effort to initiate the establishment of freshwater reserves in NSW.

Stuart Blanch, ACF, and Amy Hankinson, IRN volunteer.

PLATYPUS PREFER GUM TREES

Radio-tracking studies undertaken in 1998 by APC (Australian Platypus Conservancy) in Melbourne's south-eastern suburbs (funded as part of Melbourne Water's Urban Platypus program) indicated that platypus tend to avoid using stream segments dominated by willows, at least in summer.

These findings have now been confirmed by a study of how habitat attributes affect platypus feeding behaviour along Running Creek, a small stream located in the upper Diamond Creek catchment, north-east of the Melbourne city centre.

After monitoring the nocturnal movements five radio tagged platypus in late summer and early autumn, APC biologists determined that platypus activity was positively related to the number of native trees (gum trees and wattles) growing along the channel.

Each 25 metre section of the waterway in the part of Running Creek used by radio-tagged platypus supported on average 11 medium-to-large trees growing within 8 metres of the water, of which 82% were eucalypts or wattles and 8% were willows. By comparison, the same amount of bank in the area not used by platypus supported on average fewer than 5 medium-to-large trees, of which 21% were native trees and 70% were willows.

Differences in water quality were also apparent when a site dominated by gum trees was compared with a site dominated by willows. Notably, only about one-quarter as much oxygen was dissolved on average in the water under willows as compared to that under eucalypts – a level low enough to stress many aquatic insects (which in turn comprise the main platypus food supply).

Similarly, research in Tasmania has found that streamside willows are associated with very low dissolved oxygen levels in summer, possibly due to high rates of bacterial growth within the dense root mats which typically invade the channel under these trees.

The very tough, fibrous nature of willow root mats are also likely to physically impede the efforts of any platypus

interested in sampling invertebrates at sites where willows are abundant.

The significant negative relationship between platypus feeding activity and willows along Running Creek suggests the size of the local platypus population may well increase if sizeable tracts of willow are progressively replaced by native vegetation.

Happily, as part of an ambitious catchment rehabilitation program for Diamond Creek and its tributaries, planning is now well underway for a series of stream improvement works to be undertaken along Running Creek.

The works – to be carried out by Melbourne water in cooperation with local landowners and Landcare groups – will include removing willows, fencing stream banks to control access by livestock, and replanting the stream corridor with appropriate indigenous trees and understorey species.

Incorporating reliable information on platypus ecology into these and related work programs will help to ensure that they are as platypus-friendly as possible. As well, collecting benchmark ecological data before works are undertaken should make it possible to assess the actual contribution made by rehabilitation protocols to improving the health of aquatic wildlife habitats.

From *Ripples*, newsletter of the Australian Platypus Conservancy, www.totalretail.com/platypus

In the last 50 years, the platypus has all but disappeared from the Murray and Condamine Rivers, where it was once common.

RESNAGGING THE MURRAY RIVER

Removal of snags (dead timber) from our waterways has long been identified as a threat to our native fish populations. The reintroduction of snags has been much talked about, but rarely achieved.

Recently 14 sites in the Murray River between Yarrawonga and Cobram have been resnagged with a total of 300 trees. This large and logistical project has been undertaken in a scientific way which will not only provide additional instream habitat for species such as Murray cod, Trout cod and Golden perch, but will also test the usage of different types of snag piles by fish.

The good news is that anglers are already reporting the capture of native species at some of these new habitat sites.

This rehabilitation project has wide community support and has been funded through the Natural Heritage Trust Murray-Darling 2001 FishRehab program.

Downstream migration of adult fish

A variety of migratory strategies are used in the lifecycles of freshwater fish species of the Murray Darling Basin. Migration of fish may occur in both upstream and downstream directions. Man made barriers such as weirs and impoundments may have detrimental effects on the life histories of migrating species. Until recently management efforts to address this problem have focussed on the upstream movement of fish. Downstream passage requirements have not generally been addressed in Australia.

Some of the potential impacts of barriers to downstream migration include:

- Fish damage and mortality.
- Downstream migrants remaining above barriers leading to inability of fish to recolonise and depletion of fish stocks downstream.
- Downstream migrants being trapped above barriers in unfavourable habitats.

A trap has been constructed and installed on a weir in the Broke Creek in north-east Victoria. The trap captures all fish moving downstream over the weir wall and is set and monitored one week every month. To date (prior to any really high flows) 145 fish have been captured, of which 79% were native species. No dead or damaged fish have been recorded. Monitoring of this weir will continue until at least the end of December 2000.

Source: Codwatch, Number 18 July 2000.

Craig Woodfield, Inland Rivers Network

THE WAY FORWARD ON WEIRS

As I watched the ecologists and engineers talk enthusiastically and constructively about removing or modifying bad weirs in southeastern Australia I thought, 'Things have come a long way in 70 years'.

Along with 200 participants I was watching The Way Forward on Weirs Conference unfold. Held in Sydney on 18 and 19 August and hosted by the Inland Rivers Network it was the first multi-disciplinary conference on weirs in Australia. It brought together engineers and scientists, conservationists and fishers, local councils and fish biologists, politicians and Aborigines and many others to talk about weirs. Weirs - for the purposes of the Conference defined as all low structures on creeks, rivers and estuaries - certainly haven't attracted much attention from river managers until the last few years. Yet there are probably over 20, 000 such structures from central Queensland through New South Wales and Victoria to Adelaide. NSW alone has 3, 300 licensed weirs, with probably the same again unlicensed.



Above: Conference Day One

Below: A/Prof. Keith Walker



Small Weirs, Big Impacts

The ecological impacts of weirs, particularly the cumulative impacts of many weirs, are profound. They alter the essential nature of rivers by dampening natural flow variability and changing flow patterns. Rivers are turned into a series of stepped lakes. Stable water levels predominate upstream (hence providing a reliable water supply for human uses), reducing the stimulus for plant propagule germination and invertebrate seed hatching which are cued to wetting and drying cycles.

Weirs reduce or prevent the movement of fish during spawning migrations and kill larvae and pelagic eggs as they tumble over a barrier. Species which rely upon fish for dispersal such as mussels experience potentially significant reductions in range too, though this remains to be confirmed. The NSW Fisheries Scientific Committee has recommended in the past two years that three species of native freshwater fish (Macquarie perch, silver perch and southern pygmy perch) be listed as threatened, with weirs cited as likely causes of decline (NSW Fisheries Scientific Committee proposed and final recommendations at www.fsc.nsw.gov.au).

Importantly weirs contribute to the divorcing of floodplains from rivers by severing hydrological connectivity between these interdependent ecosystems. Pools formed behind weirs foster blue-green algal blooms and provide ideal habitat for the exotic carp (*Cyprinus carpio*). Saline groundwater mounds have also formed behind many weirs along the River Murray, killing adjacent floodplain vegetation.

The thousands of floodgates and weirs on coastal creeks and estuaries have wreaked similar destruction upon fisheries production and water quality. Often built to keep saline water off grazing or cropping lands, floodgates have robbed many fish and estuarine species of nursery grounds and essential habitat. The indirect effects are also significant - acid sulfate soil leaches from former tidal marsh land where networks of drains have exposed formerly anaerobic soils to oxygen. Estuaries are frequently contaminated with water of pH 3.5 or less.

AUGUST 18th & 19th 2000, SYDNEY



Above: Panel of Speakers from Day One

(Left to Right) Dr Ben Gawne, Murray-Darling Freshwater Research Centre; A/Prof. Keith Walker, University of Adelaide; Duncan Leadbitter, Oceanwatch; Dr Sandra Brizga, S. Brizga and Associates; Prof. Angela Arthington, Griffith University.

Greening the inland, grazing the coast

Around the time of Federation plans were afoot for as many as 30 major weirs on the Murray and Murrumbidgee Rivers for navigation and irrigation needs. The arrival of the railways, plus the Depression, meant only half that number were built in the next few decades. Yet along with the many other large and small weirs that sprang up across the Murray-Darling Basin, these have significantly curtailed natural ecosystem functioning and decimated biodiversity in rivers and floodplains.

The Murray-Darling Basin sports over 4,000 weirs. The whole 830 km length of the lower River Murray (below its junction with the Darling River) was converted into a series of ten stepped lakes in the decade from 1930 through weir construction. Forty percent of the Darling River is in weir pools.

‘Engineers Must be Environmentalists and Environmentalists Must be Engineers’

The Conference attracted an eclectic mix of sponsors. The World Wide Fund for Nature Australia matched the combined contribution from the NSW Department of Land & Water Conservation and NSW Fisheries, indicating the importance of non-government organisations in guiding river management. The Murray-Darling Basin Commission, which coordinates water management across the four Basin States, and the environmental advocacy arm of the commercial fishing sector, Ocean Watch, also contributed.

Thirty speakers addressed one of four key themes:

1. What are the effects of weirs on the environment?
2. How can weir operations be altered to reduce environmental impacts?
3. How can weirs be removed or modified? and,
4. Thinking laterally about water supply and management.

Ecologists portrayed the many environmental impacts of weirs. Fish biologists discussed the pros and cons of fishways in assisting fish to move upstream past a weir. Costing \$150,000 to \$400,000 each, a fishway can allow many species to move ‘through’ a weir but do not mitigate other direct and indirect effects.

With only a handful of weirs removed so far in Australia, the audience was challenged and encouraged to hear from three United States presenters about weir removal success stories. Eighty weirs have been removed in the state of Wisconsin alone, allowing fish back into rivers where they have not been seen for decades.

When civil engineers start talking about opening floodgates or removing structures it is a sure sign that concerns over weir impacts are becoming mainstream. Papers presented by engineers from State agencies and floodplain management authorities were some of the most insightful into the paradigm shift that is slowly occurring in formerly very pro-development institutions and bureaucracies.

The Way Forward on Weirs

Australia's first dam removal project is due to commence in early 2001. Wellington Dam near Dubbo in northern NSW is 16 m high and 100 m wide. A relic from a former era, the century old structure is no longer used, structurally unsound and a safety risk. Higher than a weir, the removal of this old dam nevertheless is providing a golden opportunity to hone environmental planning and engineering methodologies involved in removing weirs.

Sediment slugs can pose a serious environmental problem if mobilised into downstream waterways during a removal process, particularly if contaminated with heavy metals. To circumvent this Wellington Council intends to use the 10, 000 to 20, 000 m³ of sediment accumulated behind the wall to cap a local waste dump. Also the cement from the wall is earmarked for shoring up a local historic polo field in danger of being eroded by a meandering river, a considerable cost saving for the council. Hence with a little lateral thinking the removal of obsolete structures can be overwhelmingly positive for the environment and community.

One Conference presenter from an authority responsible for floodgating and draining thousands of hectares of coastal floodplain remarked that scientists, conservationists and engineers must work together to restore degraded estuaries. 'Engineers must be environmentalists and environmentalists must be engineers' was a noteworthy challenge.

Given that many weirs can not be removed (at least in the near future) the need for conservationists and engineers to converse on ways of modifying structures or altering operations is clear. Engineering solutions are possible for thousands of structures. Large weirs used for re-regulating river flows to deliver water to irrigators are particularly

damaging. Some could be left open in the non-irrigation season or raised and lowered to mimic the rise and fall of natural flow patterns. V-notches could be cut into the thousands of simple concrete block weirs to increase the volume of water passed downstream.

As scientists learn more about the decline in fish species and riverine ecosystems generally the removal of these larger structures will have to be considered. In the three score and ten years since the lower Murray was enthusiastically regulated with weirs the rivers of the Murray-Darling Basin have changed markedly. Whilst the economy of irrigation-based communities along the Murrumbidgee are strong, three fish species have disappeared from the river and as much as 80% of wetland area has disappeared. Joint projects by ecologists and engineers will be the key to solving many of these weir-related problems.

Widespread removal of obsolete weirs is planned in NSW where 80 such structures, representing just 1% of weirs, have been identified as candidates for possible removal. As a joint government-community investigation it represents the first such river restoration project in Australia. The Inland Rivers Network supports the initiative and believes that weir removal should be considered throughout Australia as a practical waterway restoration tool.

The Conference Proceedings will be available as a CD (\$25) or book (\$45) for purchase from January 2001 from the Inland Rivers Network (www.irnsw.org.au). Papers will be reviewed for scientific and technical accuracy.

Dr Stuart Blanch, Australian Conservation Foundation
Originally printed in Australasian Science Magazine



Above: Conference Organising Committee

(Left to Right): Dr John Harris, CRC for Freshwater Ecology; Roberta Dixon, Oceanwatch; Dr Stuart Blanch, IRN; Kath Webb, WWF; Anne Reeves, National Parks Association; Ellen O'Brien, consultant; Samantha Newton, NCC.

WATER REFORM NEWS

WATER LEGISLATION A TEST OF THIS GOVERNMENTS COMMITMENT

The pace to finalise the water legislation has picked up quite substantially as we are getting closer to the end of the Parliamentary sitting session.

Minister Amery re-introduced the Bill into the house on the 31 October, he also foreshadowed the Governments amendments at this time.

The Government are advocating 10 year Water Management Plans. This tenure of plans is a complete turn around from that which was included in the Water Management Bill 2000, (and that supported by the majority of public submissions to the Bill) ie. 5 year plans.

Ten year plans means that a business as usual approach will be entrenched in the new water legislation, and that NSW rivers will be decades away from improvement let alone sustainability. Scientific uncertainty of the needs of our river and groundwater systems means that planning periods which exceed 5 years are not allowing for an adaptive approach.

A small concession to 10 year plans will be the ability to undertake a review at 5 years. The objective of this review is unclear and it has been suggested that Water Management Committees will undertake the review of their own plans, a suggestion which NCC believes is outrageous. Water Management Committees are a stakeholder driven process. To have them reviewing the effectiveness of their own plans in delivering environmental flows, without any independent advice is pointless. As such the water reform process in NSW will achieve little in terms of real environmental outcomes.

The Nature Conservation Council supports an independent auditor to assess water planning, management and implementation processes. Independent rigorous auditing of Water Management Plans will be essential as a means by which the NSW public can assess whether the Government has implemented a management regime whereby the rivers wetlands, birds and fish are getting the right amount of water at the right times.

Increasing salinity, threatened fish and bird species, and decline in water quality make it obvious that the amount of water that water management committees are able to negotiate to give back to the rivers is still way off the mark. Ten year water management plans will entrench this paradigm, to the further detriment of our rivers.

A recent poll undertaken in regional NSW indicates that 95% of respondents thought that river health should be a high priority issue for the NSW Government in the next 5 years. The poll also indicates that over 70% of respondents believed that river health was important to their local economies and way of life.

The coming weeks will be a test of this Governments commitment to real water reform and to regional communities. The Government have an opportunity at hand to make a real impact, and to preserve our rivers and water sources before it's too late. An ad-hoc approach to legislation of this proportion may well cause impacts in the future which will be extremely difficult to justify to future generations.

NCC are hosting a briefing on the Water management Bill, and our amendments in the Waratah room at Parliament House on the 15th November at 6pm. Nibbles and drinks will be served, all are welcome. Please RSVP to NCC 9279 2466.

The Governments Amendments in brief

There is a State Water Management Outcomes Plan, which will be a statement of intent by the Minister and will include targets and benchmarks for the committees, set in conjunction with a community reference panel.

There are very good prioritised water management principles which are far more specific than the Objects of the Act and include things like habitat, water quality, cumulative impacts, adaptive management, Indigenous cultural significance etc

There will be an initial planning phase, prior to the implementation of any plan, whereby the Minister will make a Ministers plan which sets the initial bulk access regime. This period will not be compensable.

The Government have advocated for 10 year plans, a complete turn around from their original proposal of 5 years. However there are discussions occurring with the irrigators regarding 5 year plans. A periodic review mechanism is included, but there are no details as to who will undertake the review, and no criteria for the review are provided.

Compensation is payable for any reduction to a licence as a result of changing the Bulk Access Regime within the 10 year planning period. This compensation will be based upon market value of water lost.

Where a Water Management Committee have identified special management areas (ie riparian areas) within a Water Management Plan, these provisions can be extrapolated

from the Water Management Plan into an REP and therefore managed under the EP&A Act 1979 (this has replaced provisions for water source protection zones).

Jen Guice, NCC Water Policy Coordinator

MDB CAP REVIEW

The Murray-Darling Basin Commission has just released its final report of the Review of the Operation of the Cap. This is the most comprehensive examination of the Cap and its implications since it was implemented in 1995. The Review draws a number of conclusions relating to the Cap, and makes 23 recommendations for the future.

Some of the 15 conclusions reached by the MDBC during this review are:

- While the cap does not necessarily provide for a sustainable Basin ecosystem, it has been an essential first step in achieving this outcome.
- All water users throughout the Basin need to recognise that the water they use is part of the reduced water available to the environment.
- Without the Cap there would have been a significantly increased risk that the environmental degradation of the Murray-Darling Basin would have been worse.
- The degradation caused by the current level of diversions may well become more severe than that now apparent.
- The Cap, through protection of the natural capital stock from accelerated decline, has generated direct economic benefits to non-agricultural enterprises such as tourism, recreation and real estate amenity.

The Review also produced a number of recommendations, including:

- The Cap should be maintained.
- The precautionary principle is appropriate.
- All forms of water use be incorporated in Cap management arrangements as they are recognised and can be quantified.
- Diversions from floodplain and overland flows be included in Cap accounting arrangements as a matter of priority.
- Farm dam water use should be included in Cap accounting arrangements as soon as practicable and all future administrative arrangements should support this outcome.

The Review also supports the introduction of a regular environmental audit of rivers in the Murray-Darling Basin. This 'Sustainable Rivers Audit' is suggested as a way of establishing the Cap as an input into the environmental health of the Basin, and an obvious next step for the Murray-Darling Basin Initiative.

Craig Woodfield, Inland Rivers Network

SOLD DOWN THE RIVER

Rogue elements of Queensland's farming and fishing communities seem to have a fairly simple approach to natural resource management – use, grab or destroy as much of the resource as possible while tying the government up with an endless stream of demands for more and better consultation.

Down on the lower Balonne however, where Queensland's one third share of the Murray Darling Basin slips into New South Wales, the strategy has come suddenly unstuck.

The Queensland government, staggered at the scale of a two year dam building orgy that threatens to completely derail attempts to cap water usage on the river, last month slapped a ban on the bulldozers knocking up dams and storages.

Years of lax interpretations of lax laws has meant that in rural Queensland an outdoor dunny can need more planning permission than a 50,000 mL dam with walls 4.99 metres high.s

In the worst area, between St George and the NSW border, cotton growers and water hoarders now have about 40,000 hectares of dams at best four metres deep in an area where the annual evaporation rate is about two metres a year. More than half of this storage has been shoved up in the last two years.

Around a third of all the storage is on just one property, Cubbie station. Nothing anywhere in Australia matches its 12,000 hectare spread of storage dams running for 28 continuous kilometres alongside the trickle that is the Culgoa River.

There is enough capacity here to more than swallow the waters of Sydney Harbour although, as general manager John Grabbe says in its defence, "it is only when we have a flood where the Caribous are out dropping fodder to stock that they would all be full – this is something the environmentalists just don't understand".

Cubbie grows about 13,000 hectares of irrigated cotton and brings in about \$50 million a year. But cotton industry experts estimate that Cubbie could comfortably do that with about 150,000 megalitres of water.

Looking at river flows and the fine print of the Cubbie licences, water engineers estimate that in an average year Cubbie can take about 200,000 mL of water and in a good year, about 500,000 mL. And for the privilege, the station pays just \$3700 a year.

Upstream at the St George Irrigation Area, cotton grower Ray Kidd pays about \$30,000 a year for his allocation of around 1000 mL from the government's Beardmore Dam, and pays even when the government can't supply the water.

Mr Kidd can be ploughing in his dead crop even when the dam that was built to supply him and other channel farmers is full to overflowing. It is not drought but favoritism

bordering on corruption and staggering levels of incompetence that is to blame.

In brief terms, the successors of Sir Joh Bjelke-Petersen ignored the technicality that the dam was “slightly over-committed” to the irrigation area and handed out half as much water again to graziers down – and in certain odd cases up - the river from the dam.

The recipients of the giveaway water thus had several profitable opportunities handed to them. They could sell their property at a nicely inflated price to a channel farmer or sell the water, at a nicely inflated price, to a channel farmer.

From 1992 on, they could also park their allocation almost indefinitely in the dam, thereby reducing its capacity and ability to supply the allocations paid for by the channel farmers and, presumably, increasing their willingness to fork out for water from other sources.

The great water giveaway and the free parking policy now mean that the scheme now supplies enough water for a full crop in just one year in three. National Party governments have had no interest in fixing up the problem and Queensland Labor governments have a history of going to water at the first hint of a determined vested interest.

The channel farmers of St George have thus had to make do with insincere promises to build dams, hold inquiries and share water.

Cubbie Station’s experience with the politicians and the bureaucrats could hardly have been more different. Departmental willingness to approve huge dams on Cubbie and totally disregard the interests of Cubbie’s neighbours has drawn regular condemnation from courts.

When Cubbie overturned a regulatory scheme on a technicality, the government opted instead for self-regulation. Internal legal advice that the huge dam proposals required Environmental Impact Assessment was quietly shelved.

The department could, and should according to the courts, have taken the minimal step of gazetting the dams on a range of environmental and other impact grounds. Instead, a recommendation for gazettal on safety grounds alone was sent to the office of local member and then National Party Water Resources Minister Howard Hobbs, who rejected it.

Hobbs said his department was “just covering their backsides” and he had implemented alternative dam safety requirements. Dam builders last week did not generally know these existed.

The department also overturned internal advice that the Act required a minimum charge to be levied on each licence, something that would have given Cubbie a then annual water bill of \$74,000 rather than just \$2900.

The regulation on charges was amended at the next available legislative opportunity to allow multiple licences to be rolled into one licence for the purpose of charging at the “discretion” of the Director-General. The Director-General

appears to have exercised this discretion for Cubbie in an average year now pays \$3.70 a mL for the first 1000 mL of water harvested and gets the next 189,000 mL for free.

Mr Grabbe denies any knowledge of the departmental and ministerial machinations to Cubbie’s advantage, and points out that he is paying for all his own water infrastructure.

Out in Dirranbandi and St George, National Party politicians have been thick on the ground recently capitalising on the opposition to the Water Allocation Management Plan (WAMP) and the Queensland State Labor government’s increasingly panicky efforts to keep the whole process on track.

Queensland is now more than three years behind schedule in delivering a cap on water diversions from its one third share of the Murray Darling basin and is facing increasingly strident demands from the Commonwealth and other States to deliver.

The much delayed Condamine-Balonne WAMP proposes holding the line, at best, at a mid-1999 level of development. The farmers are replaying a variant of “We’ll all be rooned”, with John Grabbe as chief spokesperson. His media releases, however, can get to five pages in length without once mentioning Cubbie station.

Now starting to be heard over the clamour of competing cotton farmers are the environmentalists, warning that the river system and its ecological functions are in poor shape.

NSW National Parks and Wildlife Service river ecologist Dr Richard Kingsford is predicting “a major long term ecological collapse” of the Narran Lakes, a world listed wetland just over the border, which hosts migratory birds from Siberia and Western China.

Narran is also one of the last major breeding grounds for the straw necked ibis, known as “the farmers’ friends” for their appetite for plague locusts.

“The birds need a frequent flood event to breed and the Queensland WAMP is going to reduce these considerably,” Dr Kingsford said.

Phil Dickie, phildickie@ozemail.com.au

BUYING VOTES AND BUILDING DAMS IN THE BURNETT

There has been a long-standing debate occurring in the Burnett region, near Bundaberg in Queensland, over the supposed need for additional water to be extracted from the Burnett River. The sugar industry has been arguing for years that a new, large dam (Paradise Dam) needs to be built on the river to provide water ‘security’ for the lower Burnett. Conservationists, fishing industries, indigenous groups, tourism bodies and other concerned residents including citrus growers believe that a new dam will substantially decrease the ecological health of an already stressed system rendering the system, and the industries

that depend on it, unsustainable. Degradation that is already evident and that will increase if additional water is allocated from the system includes loss of fisheries, blue-green algae outbreaks, salinity problems and siltation of the estuary. The Burnett catchment was also identified in the recently released National Action Plan for Salinity and Water Quality as being a targeted area for salinity problems.

Incredibly the Queensland Government is currently considering building Paradise Dam at a capacity of up to 300,000 megalitres on the Burnett River. All 3 scenarios in the Draft WAMP allow for additional allocations to be taken from the Burnett River, despite the WAMP recognising that all of these scenarios will mean further risk of degradation. There are already at least 31 dams and weirs constricting rivers throughout the Burnett Basin and forty-five percent of average river flows in the Burnett Basin are currently diverted (State of the Environment Queensland, 1999).

With Bundaberg sitting on only 0.5% majority to the Government, water issues in this region have become extremely politicised. The Government has recently made comments that they will build the dam only if it is proven to be ecologically and economically sustainable.

In 1998, Walla Weir was built on the Burnett River downstream from the proposed Paradise Dam site. This weir is located in significant lungfish, tortoise and platypus habitat. Since the weir's construction, property managers adjoining the river have found dying lungfish on a regular basis and no longer see platypus in the area. Those opposing a new dam are arguing that the environmental destruction that is occurring within two years of this weir being built provides a good indication of what will occur should Paradise Dam be approved.

Kerryn O'Connor, Rivers Project Officer, The Queensland Conservation Council

THE PRICE OF WATER AND ENVIRONMENTAL OUTCOMES

The Independent Pricing and Regulatory Tribunal made its pricing determination on bulk prices for water taken from regulated and un-regulated rivers in September. Its view is that the most effective way of remediating environmental problems on NSW rivers is for the NSW Department of Land and Water Conservation to manage water use within ecologically sustainable river flow regimes. "The role of water pricing .. is to recover that proportion of DLWC's costs that can be attributed to managing water use".

Should environmentalists now turn their back from IPART and focus only on government and the community to implement worthwhile environmental flow regimes?

In 1996/97, IPART assessed full cost recovery for DLWC at \$44m. In September's determination, IPART reviewed

the estimates and believes them to be still much the same. This has come about because DLWC hasn't been able to provide IPART with detailed justification for its costs. It wants to provide these figures to IPART next year. It is expected that risk assessments for infrastructure and the costs of implementing water reform programs arising from a new Water Act will be the drivers for an increased cost base that can be justifiably recovered from water users.

The assessed full cost recovery includes costs for infrastructure maintenance. These costs should increase substantially now that DLWC is identifying all its infrastructure and is beginning risk assessment studies on them as part of its total asset management planning (TAMP).

The environment movement must watch DLWC assess the risks of its assets and ensure that costs of repair are paid for by water users. The cost of repairing Hume Dam on the Murray River was paid for by the Federal Government's Natural Heritage Trust rather than water users on the Murray. Will this be the last time irrigators in NSW use their political muscle to have their costs paid for by the tax-payer?

IPART's recoverable cost amount does not include a rate of return on past investments. IRN has argued against this position and continues to do so. IPART holds the view that previous infrastructure investments were politically motivated and so benefactors have no need to pay for a rate of return on the investment. If it continues to hold to that view, it should determine at what point in the maintenance regime of an asset it is appropriate for a rate of return on the maintenance costs be paid for by users.

The proportion of total variable costs of water charges for farms in NSW vary from 1-2 percent for a large cotton farm to 5-7 percent for a large rice farm. Over the past 30 years water extraction has increased from less than 5 percent of a river's flow to over 70 percent. As the costs to the environment have not been borne by extractors during this period, we are now in the position where not only can no more water be reliably extracted but river and floodplain ecosystems have collapsed or are near to collapse.

What IPART is saying is that it doesn't want to identify the environmental costs of river extraction and bear the political brunt of such an action. It wants DLWC to bear the political fall-out from making such decisions. So it uses the excuse that water charges are a small part of total variable costs for irrigators, and so increases in charges will not have any environmental impact.

But shall we see DLWC come to IPART with requests to finance the rehabilitation of rivers? We don't think so, whilst-ever it is DLWC's intention to determine its price requests to IPART by agreement made with its customer service committees and whilst-ever IPART encourages DLWC to do so.

Dietrich Willing, Friends of the Earth

WATER MANAGEMENT WEBSITE

The Council of Australian Governments (COAG) water reform agenda has stimulated State governments around Australia to develop new water management programs that incorporate a variety of innovative and potentially effective approaches. This provides Australia with the opportunity to provide a lead to other nation states, particularly those third-world countries committed to both democratic decision-making processes, and sustainable management of natural resources.

There is now the opportunity to develop a Model Water Management Framework, incorporating some of the best elements from Australian State programs, and then making it accessible through an internet site. Some principles and trends that this framework could include:

- the development of comprehensive inventories of freshwater ecosystems, within the IBRA framework, based on, and extending, existing wetland inventories;
- the development of comprehensive, adequate and representative systems of freshwater reserves;
- expansion of the integration of management programs focusing on both surface and interlinked groundwater resources; and
- the further development of integrated catchment management programs to include:
 - (a) combined groundwater and surface water management;
 - (b) freshwater biodiversity issues, including an end to the construction of new in-stream dams;
 - (c) enhanced procedures for the management of the cumulative effects of incremental water infrastructure developments (such as farm dams, levee banks and bores) through the general implementation of strategic caps, and
 - (d) enhanced compliance monitoring, auditing and enforcement programs.

Jon Nevill

MISTAKEN ASSUMPTIONS

Until recently, the water management frameworks put in place by State governments around Australia contained seven important assumptions:

- although very large dams were subject to environmental assessment, it was assumed that *small and medium-sized dams* needed only cursory assessment on a case by case basis - no assessment of the catchment's capacity to support increasing numbers of small dams was thought to be necessary. In other words, it was assumed that "the little ones don't matter";
- similar assumptions were made concerning *small users* of surface and groundwaters, and the *construction of levee banks*. These escaped catchment-based strategic assessments on the basis that "little ones don't matter";

- it was assumed that landholders should, by and large, *be allowed to place dams across small watercourses*, on the basis of generally cursory case-by-case assessments and licensing arrangements - ie: that it was unreasonable for State water agencies to ask landholders to pay the additional costs involved in off-stream dams;
- it was assumed that the harvesting of surface flows *away from watercourses* did not need to be controlled - that these flows comprised a minor proportion of total surface flows and that their harvesting did not matter to overall catchment flows;
- it was assumed that the plants and animals living in the streams would look after themselves, and that no particular attention was needed regarding the provision of a *guaranteed environmental flow* to keep them alive;
- it was assumed that, while the need to protect biodiversity necessitated the development of systems of *representative reserves* conserving key examples of terrestrial and marine ecosystems, it was *unnecessary and impractical* to apply the concept of representative reserves to freshwater ecosystems; and finally
- it was assumed that *groundwaters and surface waters were somehow separate*, and could be managed independently.

These are the central assumptions which have led to the degraded, and still degrading state of many of Australia's major freshwater ecosystems. While the COAG water reform agenda signalled the death of some of these assumptions (concerning environmental flows, for example) others live on, to a large extent unscathed by the agenda. I argue below that, while many of these assumptions were once correct, this is no longer the case, and it is dangerous to make any of these assumptions in the development of State water management frameworks. I argue that, as far as the freshwater ecosystems of Australia are concerned, it is a key challenge of the next decade to reverse all of these assumptions.

Jon Nevill

Jon Nevill B.A.(Sociology); B.E.(Mech)Hons; M.Env.Sc. Jon is an environmental scientist and planner with extensive experience in the water industry. He has published over 30 short papers and co-authored two books (one dealing specifically with the water industry). In addition to his work as an independent consultant, Jon has held senior positions in environment agencies in Queensland, New South Wales, Victoria and Tasmania. His experience in the water industry includes strategy development, environmental impact assessment, policy implementation, and the management of sewerage programs. For more information visit www.netspace.net.au/~jnevill/freshwater.htm

COAG and Natural Resource Management

The Council of Australian Governments (COAG) met for the ninth time in November, where a major topic was Natural Resource Management. The Council agreed that the issues of salinity, particularly dryland salinity, and deteriorating water quality are of major national significance and are appropriately handled through a national action plan.

Salinity and deteriorating water quality are seriously affecting the sustainability of Australia's agricultural production, the conservation of biological diversity and the viability of our infrastructure and regional communities. At least 5% of cultivated land is now affected by dryland salinity, and this could rise as high as 22%. One third of Australian rivers are in extremely poor condition, and land and water degradation, excluding weeds and pests, currently costs approximately \$3.5 billion per year.

The Council endorsed the Commonwealth's proposal for a national Action Plan as the basis for developing an Intergovernmental Agreement by the end December 2000 to tackle salinity, particularly dryland salinity, and deteriorating water quality. The Agreement will be signed by the Council out of session and will provide the foundation for developing detailed agreements with the States and Territories to implement the Action Plan.

The Action Plan builds on the achievements of the Natural Heritage Trust and initiatives by individual State and Territory governments and the Murray Darling Basin Ministerial Council. The goal of the Action Plan is to motivate and enable regional communities to use coordinated and targeted action to:

- prevent, stabilise and start to reverse trends in dryland salinity affecting the sustainability of production, the conservation of biological diversity and the viability of our infrastructure; and
- improve water quality and secure reliable allocations for human uses, industry and the environment.

The national Action Plan will involve six elements, all of which are necessary to achieve lasting improvements over dryland salinity and deteriorating water quality:

- 1 targets and standards for salinity, water quality and associated water flows, and stream and terrestrial biodiversity agreed either bilaterally or multilaterally, as appropriate;
- 2 integrated catchments/regional management plans developed by the community and accredited jointly by Governments, in the 20 agreed catchments/regions that are highly affected by salinity, particularly dryland salinity, and deteriorating water quality;

- 3 capacity building for communities and landholders to assist them to develop and implement integrated catchment/region plans, together with the provision of technical and scientific support and engineering innovations;
- 4 an improved governance framework to secure the Commonwealth-State/Territory investments and community action in the long term: including property rights; pricing; and regulatory reforms for water and land use;
- 5 clearly articulated roles for the Commonwealth, State/Territory, local government and community to provide an effective, integrated and coherent framework to deliver and monitor implementation of the Action Plan; and
- 6 a public communication program to support widespread understanding of all aspects of the Action Plan so as to promote behavioural change and community support.

The Action Plan involves new expenditure by Commonwealth, State and Territory governments to address salinity and water quality of \$1.4 billion over the next seven years. The agreed principles for funding the Action Plan include:

- the Commonwealth's financial contribution of \$700 for regional implementation of the Action Plan will be matched by new State/Territory financial contributions
- Council agreed that new State/Territory financial contributions include funding attached to measures announced since jurisdictions' budgets, provided that money is redirected to joint funding the Action Plan;
- Commonwealth contributions will be available to a State/Territory once agreement is reached with that jurisdiction on the implementation of the whole package of measures; and
- participating communities will also be expected to make appropriate contributions in addition to the above.

The Council agreed that compensation to assist adjustment where property rights are lost will need to be addressed in developing catchment plans. Council noted that, while any such compensation is the responsibility of the States and Territories, the Commonwealth is prepared to consider making an additional contribution, separate from the \$700 announced to implement the Action Plan.

The Council also agreed that joint implementation of outcomes of the national overarching agreement will commence for each State/Territory as it becomes a signatory and a partnership between the Commonwealth and each State/Territory is agreed.

Given the importance of this initiative for Australia's future, the Council indicated that its members would maintain a keen interest in progress in their own jurisdictions between now and the next COAG meeting, scheduled for first half of 2001.

Anne Reeves, National Parks Association

LETTER TO THE EDITOR

Dear Editor,

I don't know you, but I have been so impressed by the work you do putting together the Inland Rivers Network News and the articles you (and others) write, that I felt I must write to say how much your efforts are appreciated. I am only too well aware from years of battling governments to adopt more appropriate use of land and water resources in an arid, infertile country like Australia, that we're more often abused than congratulated!

Over-clearing of catchments, over-use of very limited water and the long term detrimental biological effects these must eventually have on the land unless we change our ways, has been stressed by many of us for years. It's depressing to see those trends still continuing after so long – hence my gratitude for the work you are all doing.

I worked our two properties, Thrushton and Clonard, in the Bollon and Dirranbandi districts when I was younger and shot kangaroos all over Cubby and other places for years during and after the depression years in order to stay afloat. The vast coolibah/lignum Culgoa floodplains between Dirranbandi and Hebel was some of the best fattening country in Queensland and it really upsets to go back there now in this age of cotton mania, to see the same country rooted up for mile after mile by reservoirs and channels and hardly a tree remaining. All for more and more cotton – they've gone stark raving mad.

One wonders why we bother to put in and pull out governments. I've been saying for half a lifetime – "It's never been a question of what we **don't know**, it's our reluctance to implement what we **do know** that has always been the problem". We've had the knowledge for ages and have tried to get it through to the users – but nobody could be bothered listening until literally knocked down by the evidence after the event.

Keep up the good work – it's the only way to lessen the slaughter of inland streams and wetlands. People may wake up some day and realise just how poor Australia has the potential to become unless sensitivity is used. In the meantime, I'm giving the Queensland Government a good rattle up the brisket with a red slipper for their contribution to the chaos by not doing more to halt the current land clearing and irrigation madness.

Many thanks again and my best wishes to you all.

W. J. Gasteen
Alstonville NSW
September 2000

Have your say

The Water Reforms allow environmental groups and the wider community an important role in improving the state of our rivers. To foster a greater exchange of views, opinions and information in this process, IRN will consider all comments from landholders, community groups and water users for publication in the *Forum* column of IRN NEWS. We welcome contributions concerning changes in river or wetland health since alterations to flow, opinions on restoration strategies, or how a river's health has improved following institution of the Water Reforms. Please send all articles to the address given at the bottom of the page.

IRN is a network of conservation groups and individuals with a goal of restoring and conserving the biological diversity, natural functioning and health of the inland rivers and wetlands of NSW. Together with local and regional environmental groups, IRN seeks to promote a greater understanding amongst landholders, inland communities and government of the threats to inland rivers of unsustainable land and water management practices. Member organisations on the Steering Committee include the Australian Conservation Foundation, Nature Conservation Council of NSW, National Parks Association of NSW, Coast and Wetlands Society, and Friends of the Earth.

Are you concerned about the health of inland rivers and wetlands? Do you want to assist IRN in obtaining the best outcome for both the environment and rural industries and communities over the long term? If you would like to help us in our work, please contact us or send your donation to 'Water for the Rivers Fund', Inland Rivers Network, 33 George St, SYDNEY, 2000.

This edition of IRN NEWS was edited and produced by Craig Woodfield.



**Surface
Mail**

**Postage
Paid
Australia**

INLAND RIVERS NETWORK

33 George St

SYDNEY 2000

Tel. 02 9241 6267

Fax 02 9247 1206

Email sblanch@irnsw.org.au

Web www.irnsw.org.au