

RIVER PROTECTION IN AUSTRALIA – HOLY GRAIL OR FOOL'S GOLD?

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Abstract

Australia has many examples of river protection, including protected areas, Ramsar listing and river management planning. Most fail to sustain long-term ecological values of rivers and their dependent aquatic ecosystems. Protection is a fool's gold. Rehabilitation costs accumulate (e.g. Living Murray Initiative) and protected areas and Ramsar sites degrade. Many rivers experience shortages of water, deteriorating water quality with intensive land use and increasing numbers of exotic species that result in increasing ecological degradation. As well, some of Australia's less developed rivers (tropics and central Australia) are becoming the new frontiers for development. The state of river conservation lags the well-established effort in terrestrial conservation, with its comprehensive, adequate and representative (CAR) focus through the national reserve network. A national framework for protection that establishes different tiers of importance for rivers, estuaries and wetlands can work if supported by states, territories and the Australian Government. It needs to identify rivers, estuaries and wetlands of high conservation value across Australia. This could be done using six ecological criteria at natural spatial scales of river segment, river catchment (>200 across Australia) and drainage division (12). Once identified, two main options exist for protection: 1) whole river basin protection or 2) protection of dependent ecosystems at the catchment scale. An Australian Heritage Rivers system could be established for whole of river basin protection driven primarily by river communities. For adequate protection of dependent ecosystems, the many protection mechanisms that exist need to work within a catchment scale. These include protected areas (including aquatic reserves) acquisition and management, environmental flows, natural resource management and incentives. Together or in part, they can effect long-term protection of dependent ecosystems (river segments, estuaries, wetlands). A coordinated program across Australia could set us out on a path to find this holy grail.

Introduction

Australia has a rich variety of different rivers, wetlands and estuaries that support a significant amount of its biodiversity and industry. Important social values of Australia's indigenous and European culture are also intimately linked to the integrity of our rivers. Despite this, there has generally been a poor focus on conservation of these ecosystems in Australia, compared with terrestrial conservation (e.g. national parks and reserves and regional forest agreements).

Many of Australia's rivers, wetlands and estuaries are affected by the impacts of river regulation, catchment disturbance and pest species and opportunities to effectively conserve riverine biodiversity and landscapes are disappearing all the time. There is a need to ensure that Australia's most important aquatic areas are protected and that future generations do not have to pay the high costs of rehabilitation (e.g. River Murray). This may begin with a comprehensive national framework that identifies and protects rivers, wetlands and estuaries that are of nationally high conservation value. States and territories are primarily responsible for their protection but a national framework can support consistent identification and strategic investment in the protection of nationally important aquatic ecosystems.

All state, territory and Australian governments have invested in programs and projects aimed at protection of rivers, wetlands and estuaries. There is national recognition of the importance of this issue across all jurisdictions. In 1994, the Council of Australian Governments (CoAG) agreed that the environment was a legitimate user of water. In 2004, CoAG agreed to the National Water Initiative (NWI), which will chart the future responsibilities and progress towards sustainable management of the nation's rivers and aquifers. Provisions in the associated

Intergovernmental Agreement commit most governments to identify, protect and manage high conservation value rivers and aquifers and their dependent ecosystems.

To effect protection of high conservation value rivers and their dependent ecosystems, national conservation goals are essential. They may be used also to determine short term and specific targets developed from a national vision statement for rivers. This recognises that it is not possible to single out high conservation rivers or their dependent ecosystems and expect to only protect these and achieve conservation of their values. River conservation requires a network approach that recognises that many processes and organisms may use all parts of rivers and even different rivers during their lives. A protection framework focussed only on high conservation value rivers will not work.

Vision

“By 2020, riverine biodiversity, rivers and their dependent ecosystems in Australia will be effectively protected and, where appropriate, restored, delivering significant benefits to local people and the Australian community.”

Rivers and dependent ecosystems with nationally high conservation values are a subset of the country's aquatic ecosystems where conservation value is a relative measure, established through a comparison of all rivers and dependent ecosystems. This discussion paper focuses on ecological conservation values but recognises that rivers have considerable cultural, economic and ecosystem service values.

There are two key questions for this framework.

- What rivers, floodplains, wetlands and estuaries are of high conservation value?
- How do you effectively protect these?

Elements of a national framework

We propose a national framework to help answer these questions, built around three main elements.

- Nationally consistent collection of information on rivers, wetlands and estuaries that involves agreement on spatial scale, classification system and evaluation system for identification of rivers and dependent ecosystems of high conservation value;
- A Protection Scheme with two components
 - Establishment of an Australian Heritage Rivers system that takes a ‘whole of river’ approach and
 - Protection of high conservation value rivers, river segments and dependent ecosystems (floodplains, wetlands, estuaries) in a national, state, regional and local context (using current legislative and policy tools: environmental flows, protected areas, natural resource planning and management, and incentives);
- Operational and institutional arrangements – a coordinated program involving jurisdictions in implementation of the proposed national framework.

1. Nationally consistent collection of information

All rivers, wetlands and estuaries have conservation values but we need methods to find out which have the highest national conservation value so that they may be effectively protected. To do this, we must first have a system that can operate at different agreed spatial scales. To achieve a relative comparison of conservation value, consistent and agreed approaches to classification and evaluation are needed to work across all rivers, wetlands, floodplains and estuaries. We propose using the following conservation criteria for assessment to identify high conservation value rivers and their dependent ecosystems.

The river or dependent ecosystem

- *is largely unaffected by the direct influence of land and water resource development;*
- *is a good representative example of its type or class;*
- *is the habitat of rare or threatened species or communities, or location of rare or threatened geomorphic or geological feature(s);*
- *demonstrates unusual diversity and/or abundance of features, habitats, communities or species;*
- *provides evidence of the course or pattern of the evolution of Australia's landscape or biota or;*
- *performs important functions within the landscape.*

i) Spatial framework

An agreed national spatial framework is essential for a national assessment of importance.

Recommendations

- Use current drainage divisions, river basins and river segments for initial implementation of this framework. These map layers need to be made available with their supported subcatchments and catchments.*
- River ecosystem data should be labelled according to resolvable hierarchical scales, allowing for future reassessment of classifications and evaluation.*
- Develop a new hierarchical spatial framework for management of aquatic systems and rivers, based on topography and drainage networks, without identified problems of current spatial layers.*

ii) Classification and evaluation systems

Collection of all available attribute data for the criteria, at the finest spatial scale possible (i.e. river segment), can be used to produce a national assessment of rivers, wetlands, floodplains and estuaries.

Recommendations

- Agree on the approaches to be used for assessing criteria and use of attributes for rivers, river reaches and dependent ecosystems.*
- Develop agreed national classifications of rivers and dependent ecosystems, with agreed objectives, to support evaluation and assessment.*
- Apply a nationally agreed set of evaluation criteria and significance thresholds, compatible with Ramsar and National Heritage with nationally available data, aggregated to the smallest resolvable scales of assessment (i.e. river segments and their subcatchment). This should be done to assess all river segments to identify nationally important rivers, wetlands (>200 ha) and large estuaries. This initial assessment can be reported at a range of scales, informing a national assessment but also state and regional assessments.*
- Use the methods detailed above to assess all rivers, wetlands and estuaries within 5 years and every 10 years thereafter or more frequently as information becomes available.*
- Commit to long-term investment in collection and storage of nationally consistent data on rivers and their dependent ecosystems that allows for comparison across the country.*

2. Protection Scheme

Once identified, the challenge is to ensure protection of rivers, wetlands and estuaries at different scales and contexts. We recommend a Protective Scheme with two approaches: establishment of an Australian Heritage

Rivers System and better use of existing protection mechanisms. There are generally sufficient mechanisms available within jurisdictions for protection of aquatic ecosystems but they are rarely effective within a catchment context.

i) Australian Heritage Rivers system

Potential candidate rivers should be identified that are of high conservation value, generally at the large scale (i.e. river basin, tributary river), using the methods identified above. While identification of candidates would be a national process, nomination for listing as Australian Heritage Rivers would primarily be a 'bottom-up' process by the community. Designation as an Australian Heritage River would not imply a moratorium on development but encompass sustainable use. There should be parallel development of a process that identifies and assesses cultural values.

Recommendations

- a. *Identify potential candidate river basins as Australian Heritage Rivers. This process could be done immediately, using current data but nomination and designation would not occur without community support.*
- b. *Identify institutional arrangements that would deliver an Australian Heritage River system, including current models and whether there is a need for a legislative basis. This would have the essential steps for nomination, designation, consultation and administration. The Canadian Heritage Rivers System is a model worthy of consideration.*
- c. *Largely unmodified river basins designated as Australian Heritage Rivers could be priority areas for funding river management plans that protect ecological values, prevent environmental problems, encourage uses compatible with protection of ecological values and promote understanding of ecological values and processes.*

ii) Protecting nationally important rivers, river segments, floodplains, wetlands and estuaries using current mechanisms

There are many tools within jurisdictional legislative and policy frameworks for protecting nationally important high conservation rivers, wetlands and estuaries. These can be crystallised down to four main inter-related mechanisms: environmental flow management, protected area acquisition and management, natural resource management and incentives. These need to operate within a catchment planning and management framework that logically follows the rivers and recognises their connectivity.

Priorities for protection can be defined by working off quantitative national conservation targets for rivers, wetlands and estuaries. Actual protection may be effected through jurisdictional policies and management and the regional bodies responsible for catchment management. These following recommendations for environmental flow management, protected areas, natural resource management and planning and incentives should apply to all rivers, river segments, floodplains, wetlands and estuaries identified as nationally of high conservation value.

Recommendations – environmental flow management

- a. *Essential environmental flows for long-term sustainability of rivers and their dependent ecosystems need to be identified at catchment scales.*
- b. *Environmental flows need to be managed within an adaptive management framework that ensures the best environmental outcomes.*
- c. *Targets for flow restoration may need to be developed with a focus on better management of flows and access to additional flows if required (e.g. improving water use efficiency, purchase of water).*

Recommendations – protected areas

- a. *These aquatic ecosystems should be a focus for future acquisition of protected areas (e.g. National Parks, nature reserves, conservation areas, or aquatic reserves), or nominations of important wetland areas (e.g. National Heritage, World Heritage and Ramsar sites). This may also include indigenous protected areas (<http://www.deh.gov.au/indigenous/lipa/>, accessed 18/8/2004).*
- b. *Policies and management practices and documents for protected areas with rivers and dependent ecosystems should specifically include how management or policies will meet long term ecological outcomes of sustainability (e.g. upstream environmental flows, pest control strategies and impacts of catchment disturbance).*
- c. *These ecosystems should be the focus for the development of cooperative protective management arrangements with landholders (e.g. voluntary conservation agreements and other protected area programs).*
- d. *They may be considered for heritage listing under the National Heritage List of the Environment Protection and Biodiversity Conservation Act 1999.*
- e. *They may be listed under relevant Threatened Species legislation as Endangered or Threatened ecological communities if they satisfy appropriate criteria.*

Recommendations – natural resource management and planning

- a. *Statutory resource and land use plans, including river management plans, should assess and control potential deleterious impacts at catchment scales to these ecosystems.*
- b. *Environmental objectives in water plans should adequately acknowledge high conservation value rivers and their dependent ecosystems and provide water regimes that maintain their ecological values.*
- c. *River management planning of these areas needs to explicitly incorporate rivers and their dependent ecosystems in single management plans, recognising catchment processes and hydrological connections.*
- d. *For those aquatic ecosystems that cross management borders, river planning should incorporate all of a catchment, irrespective of different jurisdictional water legislation.*
- e. *The provisions of the Environment Protection and Biodiversity Conservation Act 1999 can be triggered by developments that significantly impact on matters of national environmental significance. These currently include Ramsar sites, World Heritage areas, nationally threatened ecological communities, nationally threatened species, and migratory species (e.g. waterbirds) but in the future, rivers may include aquatic ecosystems listed on the National Heritage List.*
- f. *Where the Australian Government has jurisdiction (e.g. Australian Government land), specific statutory prohibitions may be applied. The Commonwealth Heritage List under the Environment Protection and Biodiversity Conservation Act 1999 (as distinct from our proposed Australian Heritage Rivers system) may also be used.*
- g. *Trading of water out should not occur in supply catchments of identified aquatic ecosystems.*
- h. *Water quality policies and management should link to planning, assessment and controls that protect identified aquatic ecosystems.*
- i. *Introduction of exotic species (plant or animal) should be prevented in these aquatic ecosystems and their catchments.*
- j. *River management planning of such areas needs early involvement of communities in planning, with sufficient funding for community consultation and communication.*

- k. Planning should be culturally sensitive (e.g. respect indigenous decision making and governance processes) and involve traditional owners for identified ecosystems.*
- l. Research and development could identify thresholds of land use intensification that detrimentally affect conservation values of national high conservation rivers, reaches and dependent ecosystems for improved management.*

Recommendations – incentives

- a. These ecosystems need to be identified and given priority in Australian Government, State and regional investment frameworks.*
- b. These aquatic ecosystems could receive priority in monitoring and assessment of ecological values (e.g. Rivercare, Water watch, Auditing).*
- c. These ecosystems could be a focus for tax and rate-relief programs and new incentive schemes for landholders committed to protection of these areas.*

Conclusion

Australia has had a long period of river development that has produced considerable degradation on rivers and their dependent ecosystems. There is relatively little objective understanding of the relative national importance of aquatic ecosystems, despite their status as reserves, Ramsar sites or in the directory of national important wetlands. There is a need for national objective assessment using agreed criteria that allows for the identification and subsequent protection of high conservation value rivers and their dependent ecosystems. This should be applicable at different scales from national to catchment. Once identified, most states and territories have many tools for protection although these seldom adequately used. They are generally applicable at the scale of within catchments. There are four main groups of protection tools: environmental flows, protected areas, natural resource management and planning and incentives. Whole of river basin tools and mechanisms are rarely used and usually ineffectually because they are 'top-down' legislative process. We recommend that Australia should consider a community-led process, an Australian Heritage Rivers System, comparable to a similar process operating for 20 years in Canada (the Canadian Heritage Rivers System). This would allow communities to protect whole river systems. The details of this paper are in press published (Kingsford, R.T., Dunn, H., Love, D., Nevill, J., Stein, J. & Tait, J. Protection of rivers, river reaches wetlands and estuaries of high conservation in Australia: A discussion paper describing a way forward. Land & Water Australia, Canberra).