



No.12 Conservation of biodiversity and threatened species management

Why is biodiversity conservation important?

Conservation of biodiversity can occur at the species, population, ecological community or landscape scale.

The State's rivers, lakes, estuaries, wetlands and floodplains form complex ecosystems. They support a diverse range of plant and animal species and communities that depend on natural river flow regimes and their associated ecosystem processes for survival.

Regulation of free flowing rivers and water extraction and diversion from rivers and aquifers has changed natural water regimes, adversely affecting many water dependent species, ranging from aquatic invertebrates, amphibians and reptiles, to fish, and birds (including waterfowl).

A number of mammals, ie platypus and water rats, are dependent upon aquatic and riparian habitat. Additionally, the koala uses River Red Gums as primary food trees. These trees can be affected by prolonged periods of water inundation.

Swamps and creeks provide important habitat for a number of aquatic plants, including the endangered forb (*Pilularia novae hollandiae*), a shrub (*Melaleuca biconvexa*), and a variety of submerged aquatic annual and perennial plants. Changes in hydrological conditions and water quality, drainage of swamps and the control of floodwaters through the construction of levees and detention basins, lowering of groundwater levels may affect the ability of such species to persist, including other species that coexist in the same habitat.

Policy and legislative issues

Conservation of biodiversity is an international, national, as well as a state issue. The Commonwealth is committed to the *United Nations Convention on Biological Diversity*, the *National Strategy for the Conservation of Australia's Biological Diversity* and the *Australian Strategy on Conservation of Australian Species and Communities Threatened with Extinction*.

The new Commonwealth legislation *Environment Protection and Biodiversity Conservation Act 1999* addresses matters of national environmental significance, in particular, nationally listed threatened species and ecological communities, Ramsar wetlands and migratory bird species.

The State government has developed the *NSW Biodiversity Strategy* which provides a framework for implementing the national strategy and coordinating and integrating government and community efforts to conserve the native biodiversity of NSW across all landscapes, promoting the principles of ecologically sustainable development. It should be noted that the *NSW Biodiversity Strategy* does not comprehensively address freshwater or marine aquatic biodiversity. However, an aquatic biodiversity strategy for NSW is currently under development.

In NSW, threatened species legislation provides for threatened animal and plants, populations and ecological communities¹, to be listed according to their status, as well as for the listing of key threatening processes.

¹ For the remainder of this document the term 'threatened species' is used to refer to the whole statutory formulation of 'threatened species, population or ecological community'

The following two Acts integrate threatened species management into the environmental planning and assessment process under the *Environmental Planning and Assessment Act 1979*.

1. The ***Threatened Species Conservation Act 1995*** (TSC Act) is administered by NSW National Parks and Wildlife Service (NPWS) and applies to terrestrial and freshwater plants, terrestrial animals and marine and aquatic mammals, birds, reptiles and amphibians.
2. The ***Fisheries Management Act 1994*** (FM Act) applies to fish, aquatic macroinvertebrates and marine vegetation and is administered by NSW Fisheries.

Species can be listed as:

- ◆ ***vulnerable***: species likely to become endangered unless the circumstances and factors threatening its survival or evolutionary development cease to operate; or
- ◆ ***endangered***: species likely to become extinct, or is in immediate danger of extinction; or
- ◆ ***presumed extinct***: where no reported sightings have occurred in nature during the preceding 50 years despite searching of known and likely habitats.

Additionally the following can be listed:

- ◆ ***endangered populations***: a population of a species, which is likely to become extinct, or is in immediate danger of extinction;
- ◆ ***endangered ecological communities***: an assemblage of species occupying a particular area, which is likely to become extinct, or is in immediate danger of extinction; and
- ◆ ***key threatening processes***: a process which adversely affects two or more threatened species or may cause a species, population or ecological community to become threatened.

Threatened species are listed by a Scientific Committee based solely on scientific criteria. Social and economic issues are not taken into account in the listing process. Currently there are approximately 800 listings of species, many of which depend on natural water regimes. More species and key threatening processes are being added to the list over time.

Once threatened species are listed, a recovery plan is to be prepared within 3-5 years. The recovery plan aims to promote the recovery of the species to a position of "viability in nature". In preparing the recovery plan, the likely social and economic

consequences of the making of the plan must be considered. In addition the plan must identify methods by which adverse social and economic consequences of the making of the plan can be minimised. Public authorities responsible for the implementation of a measure to be included in the plan must be consulted before completion of the draft recovery plan. A measure cannot be included unless the relevant Minister agrees.

Approaches to conserving aquatic biodiversity within water sharing plans

Principle 1

Conserving biodiversity through an approach that recognises the importance of broad ecosystems and ecological communities should be encouraged.

The most appropriate way of dealing with biodiversity is to protect as many natural areas as possible, whole communities and ecosystems, and the natural processes that support them. The interim State Water Management Outcomes Plan (SWMOP) states that an overarching target is 'an improvement in the diversity and abundance of native aquatic animals and plants, with particular reference to threatened species'.

Principle 2

The interim River Flow Objectives should be used as the basis for developing environmental flow rules that mimic the natural flow regime to which aquatic species have adapted. Any variations in water flow regimes/levels which are significantly outside the natural flow regime or which occur at the wrong time of year should be avoided.

The flow regimes of NSW rivers are naturally highly variable. However, reductions in high flows and maintenance of low flows through controlled dam releases have produced a more constant flow. On unregulated rivers, water extraction from low flows and pools have increased the extent and effect of natural dry times. Lowering of groundwater levels has also reduced the availability of surface water.

Timing, duration and seasonality of flows influence a range of ecological process such as spawning, dispersal and population recruitment. Stored water released into the system at an inappropriate time (eg during a time when there is normally no flow) can have detrimental effects on many species. Therefore, it is critical that the river flow objectives (RFOs) are addressed as a basis for ensuring that the natural

flow regime is mimicked as closely as possible and incorporated into Water Sharing Plans (WSPs).

Principle 3

During the development of the bulk access regime and environmental flows, wildlife needs should be understood and the ecological flow requirements of listed threatened species (where known) be considered and incorporated where possible, or reasons provided in the WSP where unachievable.

NSW Fisheries and NPWS committee representatives will be responsible for ensuring that the committees have access to information on the ecological flow requirements of listed threatened species (where known). The ecological flow requirements of these species will also assist in addressing the broader ecological requirements of the river flows to which they have adapted.

Flow requirements for fish, some waterbirds and plants may be readily available and this will be advised by agencies. Where the known ecological flow requirements for a listed threatened species cannot be fully incorporated in the recommendations for environmental flow rules, the WSP should acknowledge this and document the reasons why this cannot be achieved (see comments under principle 4).

Principle 4

Adopt a precautionary approach where there is a paucity of information on species flow requirements, distribution, ecological functions and threatening processes.

The flow requirements of most terrestrial and water dependent species (e.g. waterbirds, turtles, wetland and riparian vegetation) have not been defined in the current scientific literature and the "precautionary principle" must be applied in these instances.

Principle 5

Ensure that WSPs are consistent with the objectives and recommendations of established species recovery plans and threat abatement plans.

Where established, threatened species recovery plans or threat abatement plans will be provided to the committee with an explanation of the implications of these for water sharing plans. One of the main aims of WSPs is to improve the ecological health of rivers. The WSPs will therefore play a key role in assisting with the recovery of those threatened species that are directly or indirectly dependent on the natural flow regimes of a river.

However, in some priority rivers/subcatchments, existing major socio-economic or other constraints may limit the ability of the WSP to fully or partially achieve the ecological flow requirements of threatened species within the environmental flow rules.

The committee must document these constraints, the decision-making processes and justification for not being able to achieve these requirements. This will provide important background information for the Ministers to review the draft WSP when submitted.

Principle 6

Identify and maintain high and other identified conservation values, and areas which possess special requirements for the survival of threatened species, populations or ecological communities.

Changes to natural flow regimes have been identified as contributing to habitat decline and species loss. Some water sources have been identified as having high and other identified conservation values. The initial assessment of this was provided in the "stressed rivers" reports that were prepared in 1997. Some committees have further reviewed this work. Protection of these areas will assist with biodiversity conservation.

Principle 7

The socio-economic assessment of the WSPs should address potential impacts on threatened species, populations, ecological communities and critical habitat conservation.

Threatened species, populations, ecological communities and critical habitat issues are a key environmental feature in many of the priority water sources being addressed through the WSP process. The socio-economic assessment should consider potential impacts (both positive and negative) on these during the development of the WSP, particularly where the flow requirements of these are not incorporated.

Committee Role

The Committee's role is to:

- address the ecological flow requirements (where known) of threatened species, populations and ecological communities, and their habitats (including critical habitat), during the development of the environmental flow rules for the WSP;

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- ◆ address the objectives and recommendations of any gazetted species recovery plans and threat abatement plans;
 - ◆ as far as possible, incorporate these requirements into recommendations for environmental water provision within the draft WSP; and
 - ◆ document the extent to which the ecological flow requirements will be achieved, using the river flow objectives RFOs as the framework for the decision-making process.

If the committee is unable to fully accommodate threatened species requirements in its recommendations, then the justification for not being able to meet these must be documented.

The committee should also ensure that the socio-economic assessment addresses the potential impacts (positive and negative) of the WSP on biodiversity (including threatened species, populations and ecological communities and their habitats), and the requirements of Recovery Plans and Threat Abatement Plans.

Government Role

NSW Government agencies are currently developing and preparing strategies to assist with WSP development. Agency staff representatives on WMCs, particularly from NSW Fisheries and NPWS, will:

- ◆ facilitate information exchange and assistance to ensure that the WSPs adequately address aquatic and riparian biodiversity conservation and threatened species management;
- ◆ provide the committee with available information on listed species and the requirements of Recovery Plans and Threat Abatement Plans; and
- ◆ provide frameworks, resourcing and advice relating to social, cultural and economic impacts of WSPs on aquatic and riparian biodiversity conservation and threatened species management.