State of the catchments 2010

Fauna

Northern Rivers region

State Plan target

By 2015 there is an increase in the number of sustainable populations of a range of native fauna species.

Background

New South Wales has experienced severe declines and extinctions of a broad suite of native fauna since European settlement with 26 species of mammals, 12 species or subspecies of birds, one species of reptile, one marine fish and one invertebrate listed as presumed extinct under threatened species legislation. The introduction of exotic predators (cats, foxes and rats) and herbivores (rabbits, goats and sheep), clearing and disturbance of native vegetation, changes to fire regimes, changes to water flows, the introduction of exotic diseases, over-fishing and fishing by-catch are likely to have been the major causes of fauna declines.

Within the Northern Rivers region, three of the 685 species of terrestrial vertebrates recorded since European settlement have become extinct. A further nine species (11 per cent) of mammals, 51 species (12 per cent) of birds, 12 species (20 per cent) of amphibians and 54 species (42 per cent) of reptiles are estimated to have lost at least half of their pre-European distribution (Figure 1).

A detailed technical report describes the methods used to derive the information contained in this report. At the time of publication of the *State of the catchments (SOC) 2010* reports, the technical reports were being prepared for public release. When complete, they will be available on the DECCW website: www.environment.nsw.gov.au/publications/reporting.htm.

Note: All data on natural resource condition, pressures and management activity included in this SOC report, as well as the technical report, was collected up to January 2009.

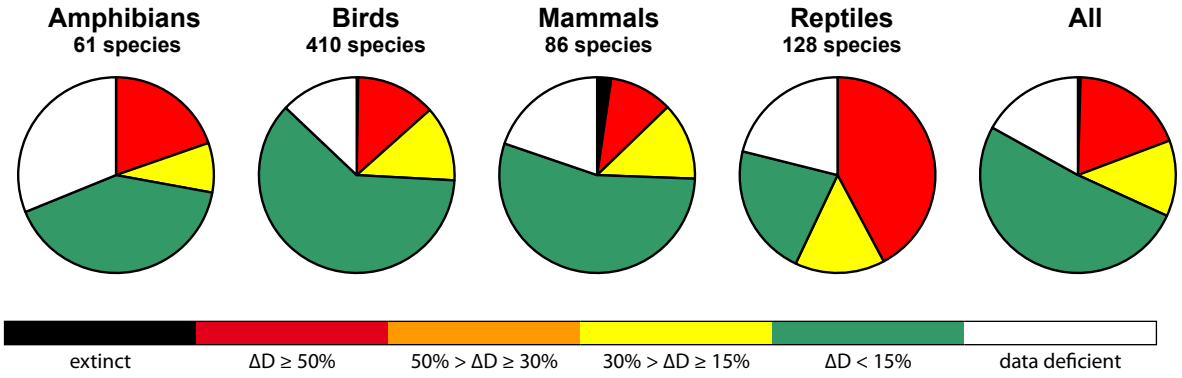
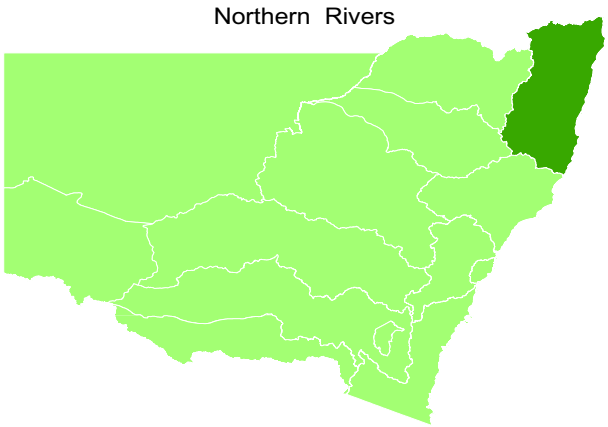


Figure 1 Distribution loss (ΔD) of amphibians, birds, mammals and reptiles in the Northern Rivers region since European settlement

Map of the catchment



Assessment

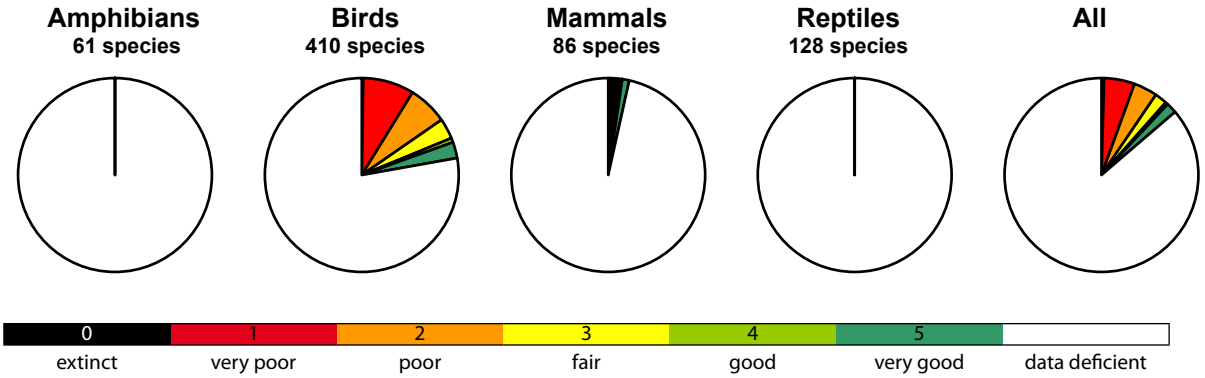
Condition

Indicators: sustainability of terrestrial vertebrate species

The sustainability (condition) of individual terrestrial vertebrate species within the region was assessed using modified IUCN Red-List criteria (IUCN 2001). In particular, estimates of total population size and distribution, trends in population size and distribution over time and direct estimates of extinction risk from population modelling were used to score sustainability for each species at the regional scale. Species were assessed only if they were being actively monitored at a regional or larger scale. Species were scored as data deficient if the uncertainty in the assessment was large. As a result, relatively few species have been assessed, but confidence in most of the assessments is medium to high. Given that this is the first such assessment of the sustainability of terrestrial vertebrates at the regional scale, data on trends in sustainability is not available.

In the Northern Rivers region, one species (one per cent) of mammal, 90 species (28 per cent) of birds, no amphibians and no reptiles were monitored adequately to assess sustainability (Figure 2). The relatively large number of assessments for birds reflects the large number of surveys

conducted across much of NSW as part of Birds Australia's Atlas of Australian Birds project. Of all assessable species within the Northern Rivers region, 15 (17 per cent) scored good or very good for sustainability. By comparison, 76 species (35 per cent) assessable across NSW scored good or very good for sustainability.



Confidence	medium to high (in species assessed)
Trend	? (this is baseline data – no trend is available until assessment is repeated)

Figure 2 Sustainability of amphibians, birds, mammals and reptiles within the Northern Rivers region assessed using modified IUCN Red-List Criteria (numbers are sustainability scores used in the sustainability assessments)

Index of fauna sustainability

An index of fauna sustainability was calculated as the mean of sustainability scores for all individual species that were able to be assessed. Although scores for individual species are categorical rather than continuous, the mean will reflect net changes in the sustainability of individual species over time. The index is biased towards the groups of species for which there is the most data (birds). It is the objective of the fauna program of the NSW Natural Resources monitoring, evaluation and reporting strategy to increase the number of assessable species.

Fauna sustainability	2.2
Confidence	low
Trend	?

Pressures

The major causes of historical declines in native fauna remain the major pressures on sustainability. These are:

- introduction of exotic predators (see also invasive species report)
- introduction of exotic herbivores and overgrazing by exotic and native herbivores (see also invasive species report)
- clearing and disturbance of native vegetation (see also native vegetation report)
- changes to fire regimes
- changes to water flows (see also riverine ecosystems, groundwater dependent ecosystems and wetlands reports)
- the introduction of exotic diseases
- over-fishing and fishing by-catch (see also marine waters and ecosystems report).

The interaction between these pressures and their impacts on native fauna is complex and cannot be easily summarised. For example, cats and foxes have been linked to more extinctions of fauna in NSW than any other factor and they remain a threat to most ground-dwelling species across the state. Nevertheless, the impacts of cats and foxes vary greatly between species and at different times, and are influenced by environmental factors. Moreover, impacts are not closely related to density; low numbers of cats and foxes can have devastating impacts on highly-vulnerable species at certain times. Thus changes in the threat posed by cats and foxes cannot be readily mapped or monitored through time at a regional scale. This difficulty applies to deriving indicators for most of the other major pressures on fauna. In the absence of such indicators, case studies of impacts and/or management responses can provide useful insight.

Pressure and response case study: foxes in the Northern Rivers region

The introduction of the red fox (*Vulpes vulpes*) into Australia in the 1870s has contributed to severe declines and extinctions of a broad range of native fauna, particularly among medium-sized (450–5000 g) ground-dwelling and semi-arboreal mammals, ground-nesting birds and freshwater turtles. Foxes are now widespread across the continent and eradication is not possible in the immediate future.

However, the impacts of foxes on native fauna can be reduced substantially by intensive broad-area (across-tenure) fox control targeting areas where native species vulnerable to fox predation persist. The Fox Threat Abatement Plan (Fox TAP) establishes priorities for fox control across all land tenures, by identifying which native species are at greatest risk from fox predation and at which sites fox control for these species is most critical. Within the Northern Rivers region, surveys have been conducted at numerous rufous bettong and Albert's lyrebird sites, which have revealed very low fox activity at most sites. In contrast, intensive across-tenure fox control has been ongoing at nine sites for threatened shorebirds, resulting in increased breeding success and adult populations of little terns and pied oystercatchers (see Figure 3).

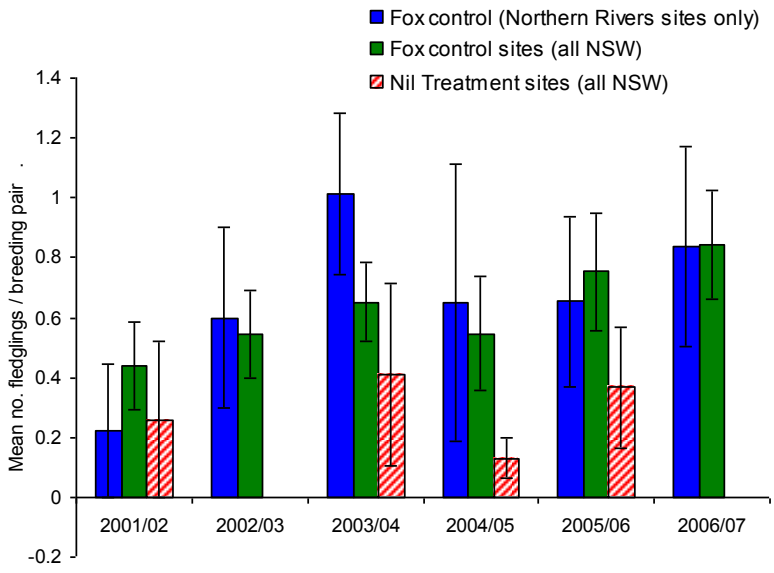


Figure 3 Fox control has increased the breeding success of little terns significantly (data: Mahon & Lassau, unpublished)

Management activity

State level

The native fauna target is being addressed at the state level through protection of critical habitat, control or eradication of priority pest animals, regulation of native vegetation clearing and urban development, and undertaking research on fire regimes. Some threats, most notably those posed by cats and chytrid fungus, remain largely unaddressed due to the lack of effective control techniques.

Some specific activities include:

- control of pest animals, through:
  - targeted cross-tenure control of foxes in priority areas through the NSW Fox TAP. State-wide control is not achievable with current methods, however the impacts of foxes on native fauna can be reduced substantially by intensive broad-area (across-tenure) fox control targeting areas where native species vulnerable to fox predation persist
  - broad-scale rabbit control through the release of myxomatosis and rabbit haemorrhagic disease
  - the eradication of rats, mice and rabbits from several NSW islands
- habitat protection, through:
  - the regulation of the clearing of native vegetation on rural lands and harvesting of timber on forestry lands, and the consideration of important habitat corridors in planning for urban development
  - dedicating about 8.4 per cent of NSW as conservation reserve
  - specifically managing about 2.2 per cent of private and other public lands in NSW for conservation under Wildlife Refuges and Conservation Agreements
  - incentive programs to improve vegetation condition and extent through replanting and grazing management on private lands (but these are often small scale)
- environmental flow allocations for water
  - provision of comprehensive advice to consent authorities regarding the protection of high conservation value vegetation in both the development of local environmental plans and in assessing proposed developments
- research, including:
  - researching the relationships between fire and the population dynamics of a range of Australian flora and fauna, allowing optimal fire regimes for threatened taxa to be considered in fire planning
- monitoring, evaluation and reporting, including:
  - monitoring Fox TAP effectiveness using surveys.

Further reading

IUCN 2001, *IUCN Red List Categories and Criteria: Version 3.1,* IUCN Species Survival Commission, IUCN, Gland, Switzerland and Cambridge, UK.

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