

## State Plan target

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

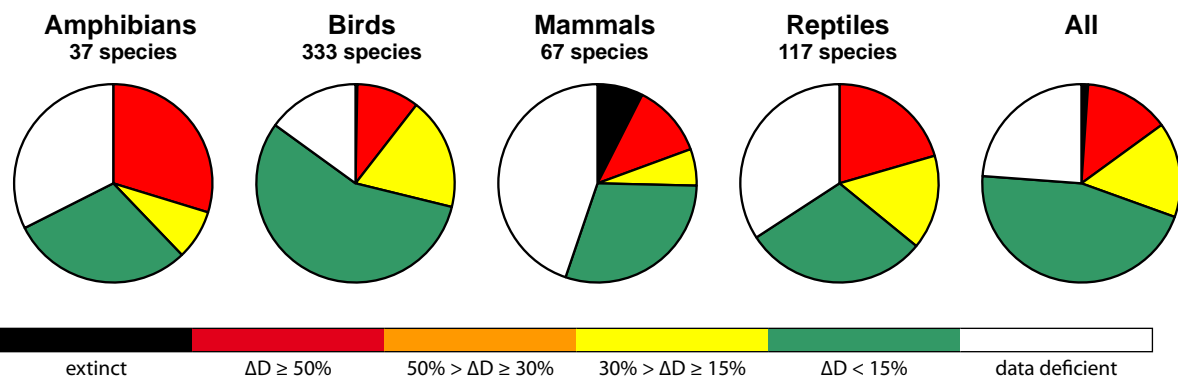
## Background

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, overfishing and fishing by-catch are likely to have been the major causes of fauna declines.

Within the Lachlan region, six of the 554 species of terrestrial vertebrates recorded since European settlement have become extinct. A further eight species (12 per cent) of mammals, 34 species (10 per cent) of birds, 11 species (30 per cent) of amphibians, and 24 species (21 per cent) of reptiles are estimated to have lost at least half of their pre-European distribution (Figure 1).

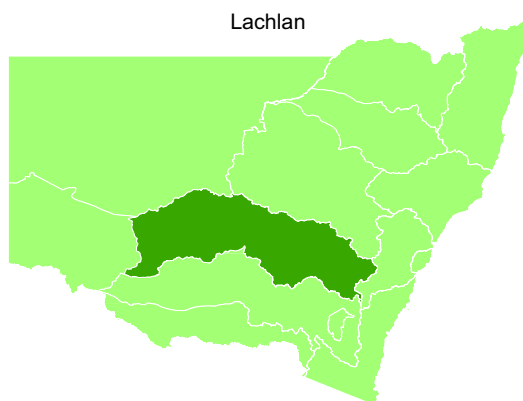
A detailed technical report describes the methods used to derive the information contained in this report. At the time of publication of the *State of the catchments (SOC) 2010* reports, the technical reports were being prepared for public release. When complete, they will be available on the DECCW website: [www.environment.nsw.gov.au/publications/reporting.htm](http://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 ( $\Delta D$ ) of amphibians, birds, mammals and reptiles in the Lachlan region since European settlement

## Map of the catchment



## Assessment

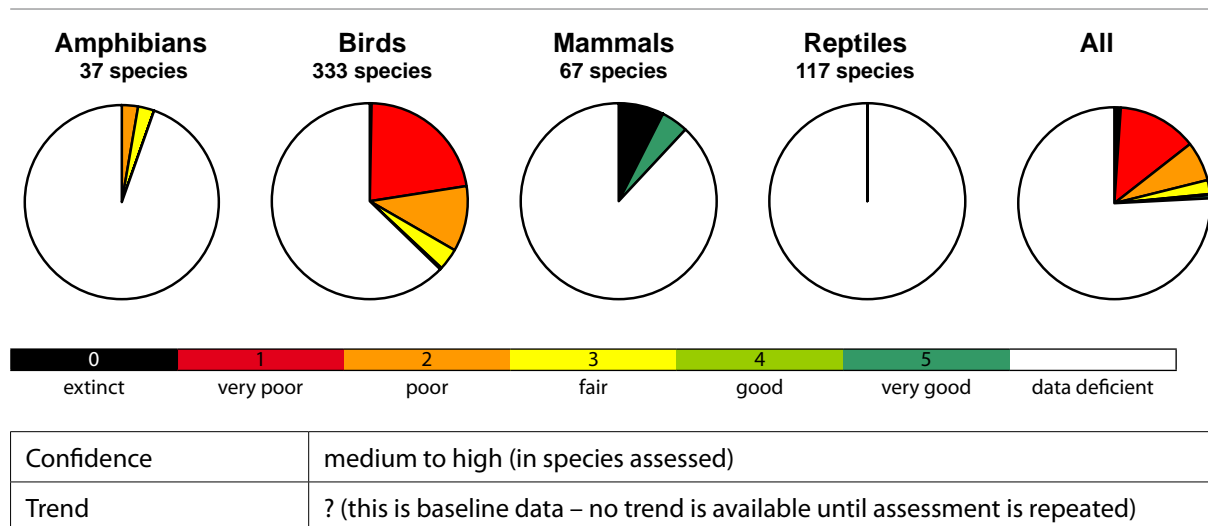
### Condition

#### **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 Lachlan region, three species (five per cent) of mammals, 123 species (37 per cent) of birds, two species (five per cent) of 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. All three of the assessable mammals are kangaroo species subject to commercial harvesting. Both amphibian species are threatened species subject to targeted monitoring. Of all assessable species within the Lachlan region, four (three per cent) scored good or very good for sustainability. By comparison, 76 species (35 per cent of assessable species) across NSW scored good or very good for sustainability.



**Figure 2 Sustainability of amphibians, birds, mammals and reptiles within the Lachlan 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	2.4
Confidence	low
Trend	?

## Pressures

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

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

- the introduction of exotic diseases
- overfishing and fishing by-catch.

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.

## Management activity

### State level

The native fauna target is being addressed at the state level through the 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. Specific activities include:

- control of pest animals, through:
  - targeted cross-tenure control of foxes in priority areas through the NSW Fox Threat Abatement Plan (NB state-wide control is not achievable with current methods)
  - broad-scale rabbit control through the release of myxomatosis and rabbit haemorrhagic disease
  - harvesting of goats across western NSW, with intensive control targeted at conservation reserves
- habitat protection, through:
  - regulating 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
- 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.



## Regional level

At the regional level, the Lachlan Catchment Management Authority (CMA) is undertaking the following activities in relation to the native fauna target:

- a range of projects carried out under other themes, which will also contribute to the conservation of native fauna. These include:
  - the Western Woodlands Way project (to link areas of native vegetation to help threatened native bird and animal populations survive)
  - enhancement of the condition of riparian native vegetation in the Blue Mountains World Heritage (Western) Area to support native fauna
  - management of travelling stock routes for biodiversity
  - projects to enhance remnant vegetation conservation, including landscape and roadside revegetation
  - Local Government natural resource management (NRM) strategies
  - the Boorowa River recovery project
  - the Private Conservation Revolving Fund Scheme
  - the Grassy Box-Gum Woodland stewardship program on behalf of the Australian Government
- the threatened ground nesting woodland birds project. The CMA is locating existing populations of the bush stone-curlew (*Burhinus grallarius*) and malleefowl (*Leipoa ocellata*) and implementing on-ground actions and strategies to aid their recovery. The two species are endangered and iconic bird species that have disappeared from many areas where they were once quite common
- the spawning and recruitment of native fish as part of the Lachlan catchment project. In the long term, the project aims to investigate the distribution and long-term viability and sustainability of native fish populations in the Lachlan catchment. It is being carried out in collaboration with the Murray–Darling Basin Freshwater Research Centre, Industry & Investment NSW (I&I) and the NSW Office of Water. The assessment will be carried out at 12 sites
- the macquarie perch habitat refuge project. Four separate populations of the threatened native fish species the macquarie perch (*Macquaria australasica*) have been identified in the Upper Lachlan. A threatened species recovery plan has been developed by I&I with the Lachlan CMA. To characterise the preferred habitat of the macquarie perch, a survey of the Lachlan and Abercrombie rivers above Wyangala dam was carried out in 2007. The presence of macquarie perch and other native fish populations was linked to a few key characteristics. These included the presence of snags and/or rock providing scour pools and shelter; shade, minimising fluctuations in water temperature; low sediment loads; and overhangs for shelter
- a survey of the recently rediscovered olive perchlet (*Ambassis agassizii*) near Lake Brewster, which was on the verge of being declared extinct in the Lachlan River.

## 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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