State of the catchments 2010

Fauna

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

Within the Namoi region, 14 of the 554 species of terrestrial vertebrates recorded since European settlement have become extinct. A further 10 species (12 per cent) of mammals, 37 species (11 per cent) of birds, four species (11 per cent) of amphibians, and 21 species (19 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.

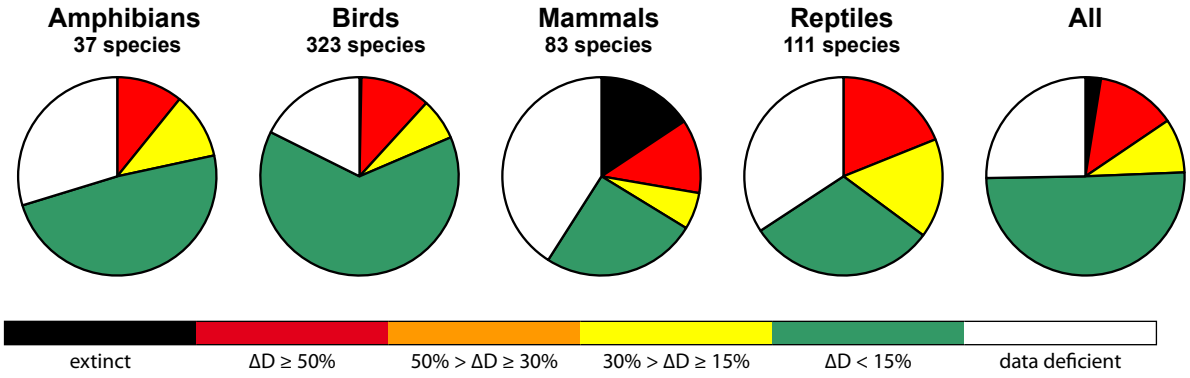
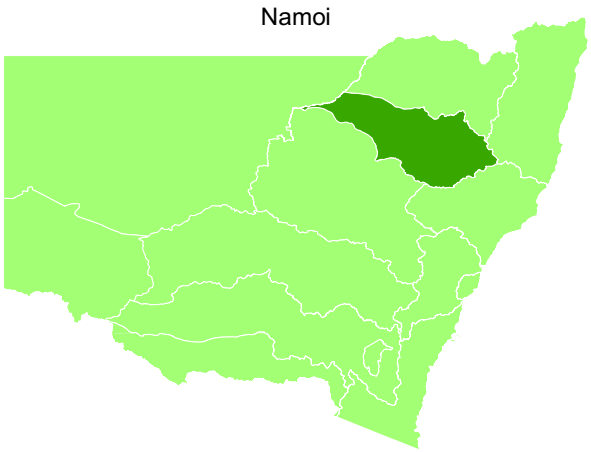


Figure 1 Distribution loss (ΔD) of amphibians, birds, mammals and reptiles in the Namoi region since European settlement

Map of the catchment



Assessment

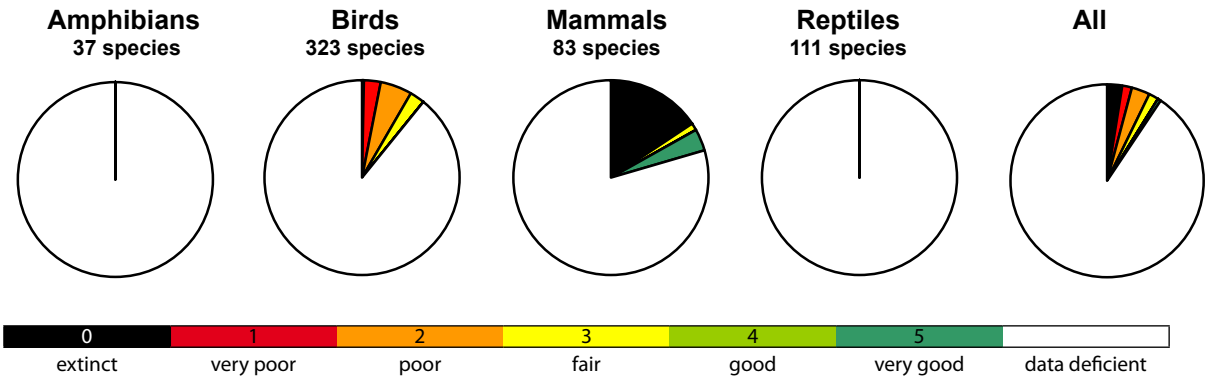
Condition

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 Namoi region, four species (six per cent) of mammals, 34 species (11 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. Three of the four assessable mammals are kangaroo species subject to commercial harvesting. Of all assessable species within the Namoi region, three (eight 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.



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 Namoi 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.

Additional information provided by Namoi Catchment Management Authority (CMA)

Fauna in the Namoi region

Namoi CMA understands the difficulties in measuring long-term changes in the distribution and abundance of native fauna. A particular challenge in the Namoi region is that the range of fauna species that would be most informative has yet to be identified. In addition, the habitat requirements of many species in the Namoi region are poorly understood. Namoi CMA believes that fauna populations need to be categorised by the type of ecosystem that they can be associated with, as well as whether they are an increasing (advantaged by human activity) or decreasing (disadvantaged by human activity) species. By cross referencing several indicators of this type, Namoi CMA will establish a subset of species for each broad landscape type across the catchment and the range of fauna species to be measured will be established. Measurement can then be undertaken using a variety of data sets including Wildlife Atlas data, but in some cases specific survey may need to be carried out.

Namoi CMA will also monitor habitat variables such as regional vegetation community (RVC) extent, vegetation condition, composition and connectivity as surrogates for fauna populations. It is our understanding that a functioning landscape with adequate, good condition and connected extant areas of all RVCs is likely to provide sufficient habitat to sustain most fauna populations. Namoi CMA understands the inherent limitations of this approach. However, we believe that as we have data that allows us to do it well at a vegetation community scale, it will provide a more accurate description in the trends to be expected in fauna populations than that provided by the inadequate data of the NSW Wildlife Atlas with all its complications resulting from patchy and inconsistent survey effort.

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:
  - 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
- 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 Namoi CMA is undertaking the following activities in relation to the native fauna target:

- funding projects in the areas of:
  - biodiversity conservation
  - strategic native revegetation
  - managing regionally significant vegetation for conservation
  - conservation of threatened species' habitats
  - weed management for priority weeds of the Namoi catchment
  - riparian vegetation protection, rehabilitation and enhancement
  - managing riparian zones under best management practice
- developing a Namoi nature conservation strategy to guide and prioritise investment in biodiversity conservation
- producing a range of different publications regarding biodiversity for the catchment community, to raise awareness and support on-ground action to protect and promote biodiversity
- educating land managers about the importance of biodiversity to their land, eg through property management planning courses run by Namoi CMA
- vegetation projects to maintain and improve habitat for a range of native fauna across the

catchment (please refer to the native vegetation report)

- threatened fauna projects, which contribute to native fauna outcomes (please refer to the threatened species report).

Local level

There are a number of other groups undertaking significant work in the region, which is contributing to better outcomes for native fauna. These groups include:

- Aboriginal organisations, particularly the Namoi Aboriginal Advisory Committee, which is convened by the Namoi CMA
- Livestock Health and Pest Authorities (LHPAs). A number of sites across the Central North LHPA area are under conservation management
- many organisations that are undertaking their own work within the catchment, using their own resources, eg the Nature Conservation Trust, which is looking at investing in further properties in the Namoi catchment for in perpetuity covenants
- universities in the region, which undertake a range of different research and management projects
- Local Government, which is undertaking a range of different projects and programs. The key interaction and coordination between Local Government and the CMA is done through the Namoi Local Government Group
- Landcare groups and the Liverpool Plains Land Management Committee, which collaborate with the CMA in various ways depending on the project.

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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Email: info@environment.nsw.gov.au Website: www.environment.nsw.gov.au
DECCW 2010/371 ISBN 978 1 74232 684 9 November 2010
Cover photo: Paul Meek /DECCW – 'red-eyed green tree frog'