

# 12

## THREATENED SPECIES



The number of species considered at risk of extinction continues to rise but at a slowing rate. There are currently 999 species listed as threatened under NSW threatened species legislation.

Species diversity is at threat from a number of human-induced pressures, in particular habitat loss, including clearing of native vegetation, and the impacts and spread of invasive species, most notably predation by foxes and cats. Species' ability to adapt to these pressures is further exacerbated by climate change.

A sustained pattern of decline in species diversity has prompted the setting up of the *Saving our Species* program, which is based on prioritising actions to maximise the number of terrestrial threatened species secured in the wild in NSW in the most cost effective manner. A process of legislative reform to streamline biodiversity legislation and improve outcomes for species is now under way.

### NSW indicators

**G** Good   **M** Moderate   **P** Poor   **U** Unknown

Indicator and status	Environmental trend	Information availability
Number of threatened species, communities and populations <b>P</b>	Increasing impact	✓✓

Notes: Terms and symbols used above are defined in About SoE 2015 at the front of the report.

## Context

The NSW landscape is not in pristine condition. Biodiversity has been modified and is constantly changing in response to mainly human-induced pressures (Byron et al. 2014). In particular, species diversity has been in a general pattern of decline since European settlement (DECCW 2009; EPA 2012). Conservation of threatened species has a key role in stabilising this loss of biodiversity.

The NSW approach to conserving threatened species now places a greater emphasis upon protecting specific species identified as being at risk of extinction. Tracking the progress of threatened species in NSW is indicative of the status of overall species diversity and may be used to understand the effectiveness of biodiversity conservation programs.

## Status and trends

### Threatened species listings

SoE 2012 (EPA 2012) noted the paucity of data available to monitor and evaluate biodiversity. Figure 7.2 in SoE 2009 (DECCW 2009) contained data describing the historical decline in distribution of native terrestrial vertebrate species while Figure 7.3 in SoE 2009 described the sustainability of native terrestrial vertebrate species. However, there have been no updates to these analyses since then, and there is little new information to evaluate the status and trends of native fauna populations or species distributions generally. As a result, this report is restricted to describing the status of native plant and animal species listed as threatened under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Fisheries Management Act 1994* (FM Act).

Table 12.1: Number of listed threatened species and populations in NSW (at 31 December 2014)

Taxa	Number of NSW native species	Presumed extinct	Critically endangered	Endangered	Vulnerable	Number of threatened species listed	% of species listed	Endangered populations
Mammals	138	25	2	16	39	82	59%	10
Marine mammals	40	0	0	3	4	7	17%	0
Birds	452	12	11	23	91	137	30%	7
Amphibians	83	0	5	12	11	28	34%	1
Reptiles	230	1	0	18	23	42	18%	1
Plants	4677	33	51*	336	227	647	14%	29
Aquatic plants and algae	?	1	1	1	0	3	?	1
Freshwater fish	60	0	2	6	1	9	15%	4
Marine fish, sharks and rays	?	1	1	2	3	7	?	0
Terrestrial invertebrates	?	1	2	14	0	17	?	1
Aquatic invertebrates	?	2	2	3	4	11	?	0
Fungi	?	0	0	5	4	9	?	0
<b>Total</b>	<b>?</b>	<b>76</b>	<b>77</b>	<b>439</b>	<b>407</b>	<b>999</b>	<b>?</b>	<b>54</b>

Source: Office of Environment and Heritage (OEH) and Department of Primary Industries (DPI) data 2015

Notes: \*Numbers include provisionally listed species

At 31 December 2014, 999 species in NSW were listed as threatened under the TSC and FM Acts. Over the past three years, listings have increased by 10, with both aquatic and terrestrial species listings increasing by five each – an increase of 1%.

This represents a decrease in the rate of species listings since SoE 2012. It should be noted that this slowing rate may reflect limited information availability rather than actual outcomes for species (see below). There are currently 77 species presumed extinct with no additional listings in that category since SoE 2012. However, further species losses may be expected due to the time lag between pressures being experienced and the remaining population dying out (referred to as the ‘extinction debt’) (Tilman et al. 1994).

Table 12.1 displays numbers of listings for various plant and animal groups.

According to the listings, the taxa most at threat from extinction are:

- terrestrial mammals – 59% listed
- amphibians – 34% listed
- birds – 30% listed.

The number of endangered populations is now 54, an increase of five (10%) since SoE 2012.

Figure 12.1 shows the increase in numbers of listed species and ecological communities, in each category, since the threatened species legislation was enacted in 1995. As noted above, growth in the overall number of species listings

has slowed down in the last three years. There are 108 threatened ecological communities – an increase of just less than one per cent over the past three years.

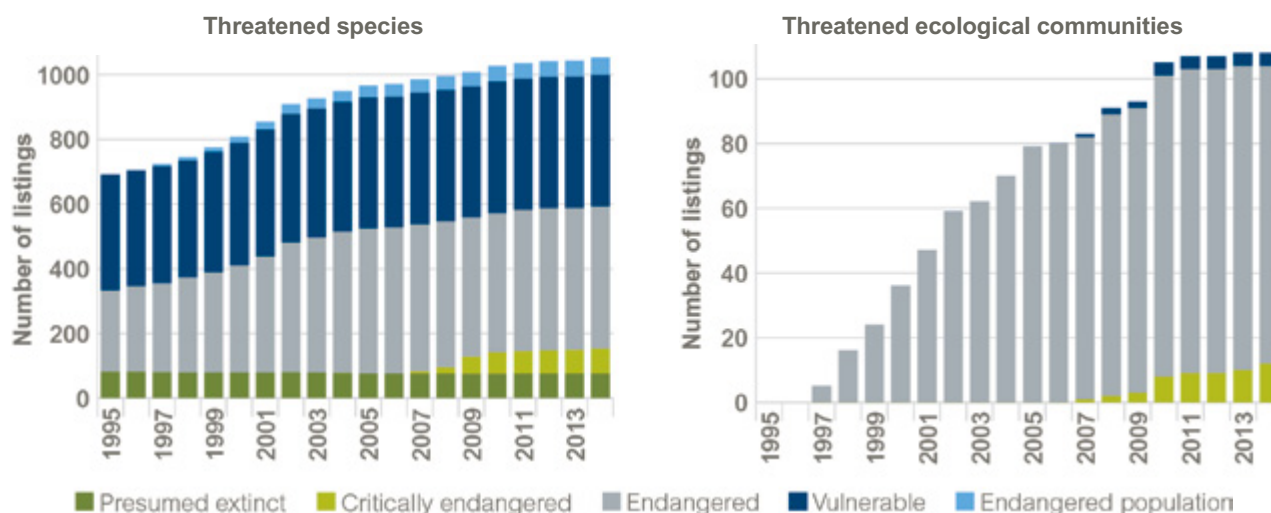
In addition, the trend of threatened species moving into categories closer to risk of extinction has slowed, with 51% of all currently listed threatened species categorised as endangered or critically endangered, the same proportion as in SoE 2012.

**Are threatened species listings a reliable indicator?**

Issues with relying on threatened species listings to indicate the status of threatened species in NSW have been well documented in previous SoE reports. Recent criticisms of the data are:

- bias towards iconic species, such as vertebrates and flowering plants. Invertebrate animals, fungi and non-vascular plants are poorly represented (EDO 2014; OEH 2014)
- overreliance on public nominations (which have decreased in recent years) where species tend to be nominated in a piecemeal fashion with no clear overarching strategic direction (OEH 2014)
- resourcing constraints affecting both the Threatened Species Scientific Committee under the TSC Act and the Fisheries Scientific Committee under the FM Act preclude strategic reviews of the listings to ensure the lists accurately reflect the current extinction risks for species (OEH 2014)

Figure 12.1: Changes in total listings of threatened species and ecological communities 1995–2014



Source: OEH and DPI data 2015

- resources may also be provided to the scientific committees for a specific purpose, resulting in skewed listings
- nominating species for listing can be time consuming and often requires specialist skills and knowledge
- listings only commenced in 1995 and this skews the trend data, as the number of listings rose quite rapidly initially and the point at which they reflect the actual situation is unclear.

It is possible that many species actually at risk of extinction are not included on the threatened species lists (EDO 2014).

### Limited information availability

There is no broad strategy or framework to monitor the conservation status of species in NSW. This is despite various requirements for monitoring and assessment in the current regulatory framework (Byron et al. 2014). As a result, there is limited information readily accessible to understand the overall status and trends for threatened species in NSW.

In 2014, the Independent Biodiversity Legislation Review panel recommended the development and use of a comprehensive system for monitoring and reporting the condition (extent and quality) of biodiversity in NSW (Byron et al. 2014). The NSW Government's adoption of this recommendation may assist with availability of data for future SoE reports. Further information on the biodiversity legislation reforms is provided below.

## Pressures

The major threats to biodiversity include habitat loss, including the clearing and the disturbance of native vegetation, the impacts of invasive pest and weed species, altered fire regimes, and climate change (Byron et al. 2014). The pressure affecting the largest number of terrestrial threatened species in NSW (87%) is the clearing and disturbance of native vegetation, followed by invasive pest and weed species (Coutts-Smith & Downey 2006). Introduced pests are likely to have had the greatest impact on native fauna. In particular foxes and cats are considered to be responsible for the majority of fauna extinctions in NSW (Morton 1990; Dickman 1996a; Dickman 1996b).

The current status of a number of key pressures on threatened species are described in other sections of this report including:

- Theme 13: Native vegetation – The clearing of native vegetation and the associated destruction of habitat has been identified as one of the greatest threats to biodiversity in NSW.
- Theme 15: Invasive species – Invasive species have been implicated in the decline of many native species, and are thought to impact over 70% of listed threatened species.
- Theme 17: River health – Water extraction, altered river flow regimes and degraded water quality impact on the critical ecological processes that trigger breeding events for various aquatic and bird species.
- Theme 1: Population – Expanding human settlements demand space and can increase the fragmentation of ecosystems, making biodiversity an important environmental consideration in land-use planning.
- Climate change (see Theme 5: Greenhouse gas emissions) – Rapid changes in climate can challenge the ability of species to adapt through methods such as dispersal and resettlement, and can exacerbate the effects of other pressures (such as the expansion of invasive species) (DECCW 2010).

Pressures not dealt with specifically in other sections of this report include altered fire regimes due to European settlement and the indirect impacts of development. These include road mortality and disturbance to behaviour and breeding cycles from infrastructure, noise and lighting (Byron et al. 2014).

Most of the pressures above were described in greater detail in SoE 2012 and that information continues to be relevant.

It should also be noted that many of the pressures discussed operate together to have a cumulative or synergistic impact on species' decline. A synergistic impact occurs where the interaction between multiple disturbances results in an impact that is greater than the sum of the individual pressures (see Raffaele et al. 2011; Goldman Martone & Wasson 2008; Simberloff & Von Holle 1999).

## Listing of key threatening processes

The threatened species legislation provides for a key threatening process to be listed if it either adversely affects a listed species or could cause a species that is not threatened to become threatened.

There are currently 46 key threatening processes listed in the threatened species legislation. Since SoE 2012, one key threatening process has been listed relating to a native species – the noisy miner.

Noisy miners physically attack and actively drive away birds of similar or smaller size from areas they occupy. This aggressive behaviour often results in the noisy miners being the only small–medium-sized bird species present in an occupied habitat (NSW SC 2013).

## Responses

Although many of the established responses set out in SoE 2012 are still in force and relevant, the last three years have seen a number of reviews of the existing response mechanisms that may result in substantial changes to the way threatened species conservation is approached in NSW in the future.

### Biodiversity legislation reforms

In 2014 the Minister for the Environment established an independent panel to review the *Native Vegetation Act 2003*, *Threatened Species Conservation Act 1995*, *Nature Conservation Trust Act 2001* and parts of the *National Parks and Wildlife Act 1974*. The aims of the review were to recommend simpler, more streamlined and effective legislation to conserve biodiversity (including threatened species), support sustainable development and reduce red tape.

Published in December 2014, the panel's final report, *Review of Biodiversity Legislation in NSW* (Byron et al. 2014), made 43 recommendations, including that the TSC Act be repealed and reconstituted into a new Biodiversity Conservation Act. In March 2015 the NSW Government endorsed all 43 recommendations.

### *Saving our Species* program

Under both the TSC and FM acts, a priority action statement is required to provide a strategic framework for coordinating

conservation and management actions across listed threatened species.

In 2013, the performance of the NSW Threatened Species Priorities Action Statement under the TSC Act was reviewed following its first three years of operation (2007–10). This review found that while significant worthwhile conservation work was being undertaken, it was unclear to what extent this work benefited threatened species. The review has led to an innovative method of developing projects to meet the needs of threatened species in NSW, namely the *Saving our Species* program. The program aims to maximise the number of terrestrial threatened species that can be secured in the wild in NSW for 100 years.

Through *Saving our Species*, terrestrial threatened species have been allocated to one of six management streams, depending on their distribution, ecology, security and what is known about them. The six management streams are:

- **site-managed species:** species (such as the smoky mouse, eastern bristlebird and granite rose) that can be successfully secured by carrying out targeted conservation projects (such as weeding or revegetation) on a specific site
- **iconic species:** five species that are especially valued by the community – the koala, brush-tailed rock-wallaby, mallee fowl, southern corroboree frog, and Wollemi pine
- **data-deficient species:** species where there is insufficient information to allocate them to another management stream (includes Sloane's froglet, finger panic grass and the matted bush-pea)
- **landscape-managed species:** species that are distributed across large areas and threatened across the landscape by habitat loss and degradation (e.g. the green-thighed frog, pale-headed snake, yellow-bellied glider and giant dragonfly)
- **partnership species:** species that are threatened nationally and have important populations in NSW will have conservation projects developed for them
- **keep watch species:** these species, for example Hall's babbler and the spiny mintbush, require no immediate investment because they are either naturally rare, have few critical threats, or are more abundant than previously assumed.



Priorities for action under *Saving our Species* are species in the site-managed, iconic, data-deficient and landscape-managed species management streams.

The Independent Biodiversity Legislation Review Panel recommended designing a legislative framework for action on threatened species and ecological communities that formalises the programmatic approach taken by *Saving our Species*. This recommendation has been adopted by the government.

### NSW public reserves system

The NSW public reserves system covers around 7.1 million hectares or about 8.9% of the state (see also Theme 14: Protected areas and conservation). It conserves representative areas of the full range of habitats and ecosystems, and the majority of plant and animal species found in NSW. Over the past three years there have been significant additions to under-represented areas of the reserves system.

The public reserves system is the cornerstone of conservation efforts in NSW. It plays a vital role in protecting habitat and provides a refuge for many threatened species that are sensitive to habitat disturbance.

### Policy and guidelines for fish habitat conservation and management

In 2013, an updated policy and guidelines were published aimed at maintaining and enhancing fish habitat in NSW for the benefit of native fish species (including threatened species) in marine, estuarine and freshwater environments (DPI 2013).

### NSW biodiversity offsets policy for major projects

In October 2014, the NSW biodiversity offsets policy for major projects was released, which clarifies, standardises and improves biodiversity offsetting for major project approvals. The policy aims to strike an effective balance between the needs of proponents, communities and the environment by:

- providing clear, efficient and certain guidance for stakeholders

- improving outcomes for the environment and communities
- providing a practical and achievable offset scheme for proponents.

The Independent Biodiversity Legislation Review Panel recommended expanding the offsets policy for major projects to create a consistent approach to avoiding, minimising and offsetting biodiversity impacts for all types of development, and to drive a positive market for landholders to opt in to long-term stewardship contracts to supply environmental services. This recommendation has been adopted by the government.

## Future opportunities

The NSW Government has announced an additional \$100 million over five years from 2016–17 to *Saving our Species*. These funds will allow the program to expand to cover more species and also ecological communities and threatening processes that impact many species across the landscape.

The NSW Government is looking at increasing landscape-scale conservation to complement threatened species protection and recovery. This would involve a greater uptake of what is currently known as BioBanking and biodiversity certification schemes, along with developing a comprehensive network of biodiversity corridors (Byron et al. 2014) (see also Theme 14: Protected areas and conservation).

The review of biodiversity legislation in NSW (Byron et al. 2014) has emphasised the need for monitoring and evaluation of the condition of biodiversity in NSW. Under the *Saving our Species* program, monitoring and reporting is also mandatory for funded projects, and this may lead to more comprehensive datasets to enable reporting on changes in the distribution and abundance of threatened species in future State of the Environment reports.

There is also scope to incorporate the traditional knowledge of Aboriginal people, which historically has been underutilised, to better conserve and manage native species and ecosystems (Byron et al. 2014).

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