NSW GOVERNMENT | Office of Environment & Heritage

Introducing Saving our Species

Together we can secure threatened species in NSW

saving our species

Cover photo: There is hope for the survival of NSW's most threatened species such as the mountain pygmy-possum under the *Saving our Species* program. Photo: M. Schroder

Published by:
Office of Environment and Heritage
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Phone: 1300 361 967 (national parks, climate change and energy efficiency information, and publications requests)
Fax: (02) 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

ISBN 978 1 74293 554 6
OEH 2013/0344
December 2013

Minister's foreword

Threatened plants such as *Acacia pubescens* will be protected under *Saving our Species*.
Photo: B. Collier.

NSW is home to some of the world's most beautiful flora and fauna. Unfortunately, we are currently at risk of losing some of them from the wild. Nine hundred and sixty seven plants and animals are listed as being threatened with extinction in NSW and without action some may never be seen by the next generation.

As a government and a community we cannot accept this.

Recovering threatened species from extinction is a substantial challenge, but it is one this government is prepared to tackle. The *Saving our Species* program heralds a new era in threatened species management and I commend this comprehensive publication to all those interested in protecting our biodiversity.

The *Saving our Species* program commits to spending more money on threatened species more efficiently. Well-targeted investment such as the program of recovering Gould's petrel has led to its population increasing and its status being downgraded from endangered to vulnerable on the threatened species list. Scientists, the government and the community have worked together successfully to achieve a great outcome. Unfortunately, this is currently one of only a few positive examples.

The *Saving our Species* program sets a clear management framework to determine priorities between species, and to plan the most effective recovery actions that will secure species in the wild. Monitoring the effectiveness of these actions will mean that in time we will be able to see what has worked and where we can improve.

We cannot do this alone. Achievement of this ambitious goal will take strong leadership from the government; reliable scientific knowledge and evidence; and new and innovative programs in which every tier of government, every environmental agency and organisation, every school, and every volunteer and landholder are pulling together in the same direction.

There can be no doubt that a concerted and coordinated statewide effort is the only way to secure the survival of as many of NSW's threatened species as possible in the wild. The *Saving our Species* program provides opportunities to trial innovative approaches such as creating secure terrestrial islands, to learn more about threatened species by researching threats to their survival, to work together on threatened species projects and to share knowledge and experience.

There is no simple solution to threatened species management – it is a big task and an ambitious goal we have set for our state.

I know the NSW Government is up for this challenge and I invite everyone to join us on this journey so future generations will also experience the beauty and diversity of our precious environment.

Robyn Parker
NSW Minister for the Environment

Contents

Under *Saving our Species*, the southern brown bandicoot will be managed on a site-by-site basis. Photo: T. Sargeant.

Summary

Introduction 1

How does *Saving our Species* work? 4

Getting involved 20

The development of *Saving our Species* 24

How will the program's impact be measured? 27

Conclusion 29

Summary

The little tern is one of the first species to receive funding under the program. Photo: J. Dunn.

Saving our Species is a new conservation program that aims to maximise the number of threatened species that can be secured in the wild in NSW for 100 years. Unlike previous programs, *Saving our Species*:

- aligns everyone's efforts under a single banner, so investment in threatened species conservation can be accounted for
- assigns threatened species to different management streams so the individual requirements of each species are clearly understood
- invites the NSW community and businesses to participate, because projects to save threatened species are collaborative efforts.

Through *Saving our Species*, 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
- iconic species
- data-deficient species
- landscape-managed species
- partnership species
- keep watch species.

Priorities for action under *Saving our Species* are species in the site-managed species, iconic species, data-deficient species and landscape-managed species management streams. Direct action will be considered for nationally listed partnership species but is not expected for keep watch species unless threats substantially increase.

For site-managed species, conservation projects will be prioritised to maximise the number of species that can be secured with available resources.

Revised strategies for populations, ecological communities and key threatening processes will be developed next.

Anyone who undertakes or is interested in threatened species conservation can get involved in *Saving our Species*. People can:

- share information on the website about what they are already doing
- subscribe to receive updates on the program and threatened species conservation projects
- search for a conservation project in their area
- learn more about threatened species.

Local conservation groups, landholders, schools and local businesses can search the website to find project sites in their local area and share ways in which their actions are helping to save a species.

Research organisations can view key knowledge gaps that need to be addressed for species little is known about, and undertake this research.

Private landholders can enter into an agreement for managing a threatened species on their land, or join other partnerships to conserve species.

Corporate investors and philanthropic organisations can invest in securing a species or managing a project.

Local councils and catchment management authorities can identify threatened species management sites in their areas to enhance their own programs.

Decision makers, government agencies and project managers can gain information to help them prioritise their own local and regional actions, find out what is happening in threatened species conservation management across the state and coordinate management across government and landholder boundaries.

To get involved, visit www.environment.nsw.gov.au/savingourspecies,
email savingourspecies@environment.nsw.gov.au or phone 131 555.

***Diuris venosa*. Photo: T. Rodgers.**

Introduction

The glandular frog is found in the New England region of NSW. Photo: D. O'Brien.

The numbers of many species in NSW are decreasing, and many species are verging on extinction. There are 967 species listed in the NSW *Threatened Species Conservation Act 1995* as at March 2013, including 72 species that are presumed extinct.

This is a disturbing trend, but **we do not need to accept it**. With effective environmental management, almost all threatened species can be saved.

Importantly, the more that government, industry and the community work together to manage threatened species, the more species can be secured.

The Office of Environment and Heritage (OEH) is revitalising threatened species management through a new program: *Saving our Species*. This program has an ambitious but achievable objective: 'To maximise the number of threatened species that are secure in the wild in NSW for 100 years'. A species is defined as 'secure' when it has a 95% chance of surviving in the wild for 100 years. Species can only survive if existing and new threats are managed in the long-term.

Conservation status

Threatened species are listed in four categories in the *Threatened Species Conservation Act 1995*, as:

- **presumed extinct** if they have not been seen in nature during the past 50 years, despite the searching of known and likely habitats
- **critically endangered** if they face an extremely high risk of extinction in NSW in the immediate future
- **endangered** if they are likely to become extinct or are in immediate danger of extinction in the wild in NSW
- **vulnerable** if they are likely to become endangered unless threats cease.

Most threatened species are listed as either endangered or vulnerable (Figure 1). Species that are listed as critically endangered or endangered are most likely to become extinct in the near future.

Mammal species are the most threatened group in NSW with 59% of all mammals threatened with extinction compared with 28% of birds, 34% of amphibians, 18% of reptiles and 13% of plants. The *Threatened Species Conservation Act 1995* also lists endangered populations, threatened ecological communities and key threatening processes.

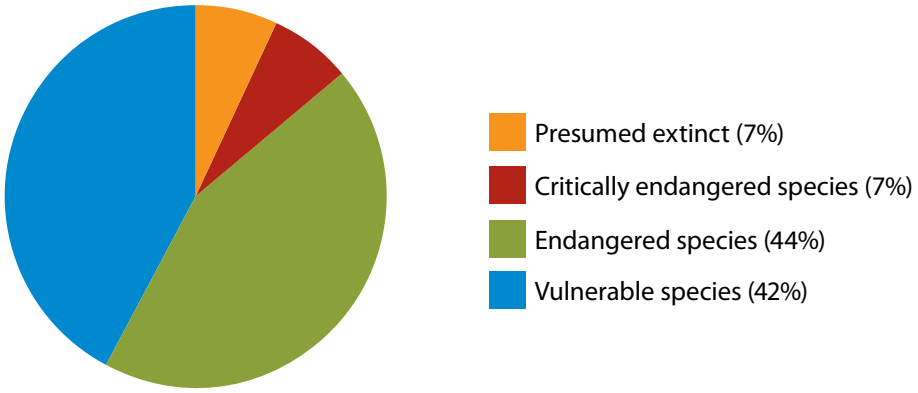

Figure 1 Threatened species listed under the *Threatened Species Conservation Act 1995* in each conservation category, 2013

Saving our Species covers all species, populations and communities listed as threatened in the *Threatened Species Conservation Act 1995*. It also covers many species listed in the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* that occur in NSW, and will aim to secure those species.

How does *Saving our Species* differ from other threatened species management programs?

The new program differs from previous programs in that it:

- aligns everyone's efforts under a single banner, so investment in threatened species conservation can be accounted for
- allocates all threatened species to one of six management streams that focus on providing the best outcomes for each species
- provides conservation projects, developed by experts; the projects set out in detail the management actions required at specific sites to secure each species in the wild for 100 years
- prioritises projects according to their cost and feasibility and benefits to the species, to help decision-makers and investors make the most effective investment
- regularly monitors the effectiveness of projects and uses this information to refine them
- encourages community, corporate and government participation in threatened species conservation
- provides a website to map and track activity and evaluate program effectiveness.

See 'How does *Saving our Species* work?' for more information.

What will the program achieve?

Saving our Species will:

- **secure the future** of as many threatened species in NSW as possible
- **make it easier for land managers and local communities to** participate in statewide projects that can guide and coordinate local actions on specific sites
- **continually improve its effectiveness** by monitoring the outcomes of conservation projects
- **support effective investment** in threatened species conservation locally and across NSW by providing cost–benefit information to local and regional decision-makers
- **attract greater levels of investment** from public and private sources to secure threatened species in the wild in NSW
- **improve transparency** by providing information to the public about investment decisions and the outcomes of those decisions for species
- **improve awareness and understanding** of the importance of threatened species in the NSW community
- **provide information on the OEH website and through social media** to increase opportunities for the people of NSW to be involved in conserving threatened species.

Volunteers, here helping trap, weigh and release native mice in national parks to check they are in good health, will play an important role in *Saving our Species*. Photo: S. Cottrell.

Working together

We can save the threatened species of NSW by working together.

While many people undertake conservation activities, donate to conservation organisations and educate their children about the environment, *Saving our Species* will help local communities do more by providing the support and information they need to contribute meaningfully to threatened species conservation.

Saving our Species encourages partnerships between various groups, organisations and individuals such as OEH, community groups, schools, landholders, councils, state government agencies and organisations that provide conservation management services so they can work together on on-site activities. The program will also provide opportunities for partnerships with the corporate sector and philanthropic organisations who are interested in funding the conservation of threatened species, particularly iconic species. Partnerships with the community, research institutions and universities will also be established to support research into little-known threatened species.

See 'Getting involved' for more information.

How does *Saving our Species* work?

The wompoo fruit-dove is a landscape-managed species under the program. Photo: L. T. Shears.

The task of coordinating the management of each and every listed threatened species in NSW is large, complex and challenging. Six management streams have been established so actions can be better targeted to meet the needs of all threatened species.

The management streams do not affect the criteria for listing threatened species or their conservation status. They identify the type of management required, including whether increasing knowledge of a species is required before effective management actions can be developed.

Management streams — maximising species' survival

Site-managed species (42% of or 405 threatened species) are best managed by carrying out targeted conservation projects on specific sites. Projects have been scoped, assessed for feasibility, costed and prioritised.

Iconic species (<1% of or 4 threatened species) are important socially, culturally and economically and the community expects them to be effectively managed and protected. Iconic species projects have been prepared for all iconic species based on existing recovery plans. All iconic species projects will be conducted – they will not be prioritised.

Data-deficient species (19% of or 180 threatened species) are species for which there is insufficient information available to allocate them to another management stream. A species action statement has been prepared for each species that outlines the research and survey priorities for OEH and partners such as universities and field naturalist groups.

Landscape-managed species (14% of or 132 threatened species) are typically distributed widely and can be best recovered by managing the threats that apply to many species, most often habitat loss or degradation. These species will largely be managed through protecting the broader landscape through vegetation management programs under the *Native Vegetation Act 2003* and conservation programs in national parks and reserves under the *National Parks and Wildlife Act 1974*.

Partnership species (16% of or 151 threatened species) have less than 10% of their distribution in NSW. These species are either common in other states or territories or programs for their management are coordinated by other jurisdictions. The NSW Government will consider managing species that are nationally listed and have key populations in NSW in partnership with the leading jurisdiction.

Keep watch species (10% of or 95 threatened species) require no immediate investment, either because they are naturally rare with few known threats, or are known to be more abundant than previously assumed when they were listed as threatened. OEH staff will keep a watching brief on these species.

How have species been allocated to management streams?

Figure 2 describes the process for allocating a species to a specific management stream.

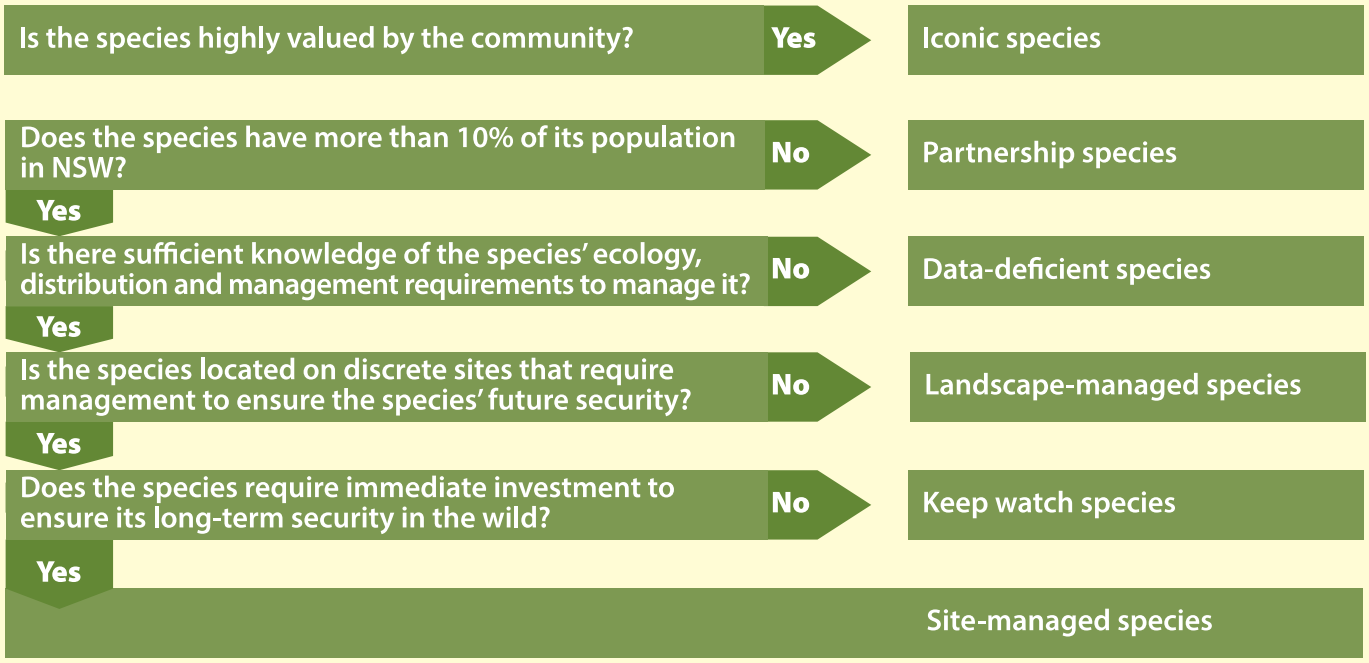

Figure 2 Allocation of species to management streams

The number and percentage of species in each management stream is shown in Table 1. The threatened species that are assigned to each management stream will change over time as species move between streams; for example, when new information is gathered a species may move from 'data-deficient' to 'site-managed'.

Table 1 Number and percentage of species in each management stream as at November 2013

Management stream	Number of species listed in the TSC Act	Percentage of species listed in the TSC Act	Number of species also listed in the EPBC Act
Site-managed	405	42%	218
Data-deficient	180	19%	71
Partnership	151	16%	17
Landscape-managed	132	14%	35
Keep watch	95	10%	59
Iconic	4	under 1%	4

EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999;* TSC Act = *Threatened Species Conservation Act 1995*

NB New threatened species are continually being listed in the TSC Act. The number of threatened species listed here was current as at November 2013.

Management of iconic species such as the brush-tailed rock-wallaby will be guided under *Saving our Species* by actions in recovery plans. Photo: S. Ruming.

What activities are being undertaken through *Saving our Species*?

The work of threatened species conservation covers many activities from on-site management actions conducted by private and public land managers, to land-use planning and regulation, to science-based actions involving surveys, research and monitoring, to activities carried out by local conservation and community groups.

The activity undertaken for a species will depend on its management stream. Through *Saving our Species,* funding and effort will be directed to the most important activities in each management stream. For example, important activities for data-deficient species are those that provide more information on their ecology, distribution and abundance. The most effective actions for site-managed species are on-site conservation projects undertaken by landholders, local communities and government agencies.

Table 2 shows ways in which different activities are prioritised in each management stream.

Table 2 Types of conservation activities

Program area	Sample activities	Relationship between program areas and each management stream
On-site management	Working across public and private lands to: • promote and facilitate a network of non-government organisations and community groups • provide information and expertise on management actions required at key sites • enable private landholders to manage threats on private lands • encourage donations to support on-ground activities	Key focus for: • site-managed species • iconic species Supporting focus for: • landscape-managed species • partnership species Not a focus for: • data-deficient species • keep watch species
Planning and regulation	Working with planning and regional authorities on: • strategic land-use planning • development control • native vegetation clearing	Key focus for: • landscape-managed species • iconic species Supporting focus for: • site-managed species • partnership species • data-deficient species • keep watch species
Knowledge development	Working with scientists and volunteer field naturalists on: • targeted surveys • research • monitoring and evaluation	Key focus for: • site-managed species • iconic species • data-deficient species • keep watch species Supporting focus for: • landscape-managed species Not a focus for: • partnership species

The little tern is a site-managed species and benefits from actions undertaken on specific sites. At Towra Point, conservation volunteers are fortifying little tern nests to protect the eggs and young chicks.
Photo: M. Abramowitz.

The grassland earless dragon is a site-managed species under *Saving our Species*, so will be managed through a targeted conservation project. Photo: W. Smith.

Prioritisation across management streams

Resources available for the management of threatened species are generally far outweighed by what is required. As a result, everyone who takes action to save threatened species is confronted by difficult questions about prioritisation, such as 'which species should I direct my effort towards?' and 'what actions should I take?'.

This approach is a key feature of *Saving our Species*. The highest order prioritisation question concerns the management streams: 'which management streams should be prioritised for resourcing?'. This question is answered by allocating the management streams to three priority tiers:

tier 1 – site-managed species, iconic species and landscape-managed species

tier 2 – data-deficient species

tier 3 – partnership species and keep watch species.

Site-managed species, iconic species and landscape-managed species are considered the highest priority for investment. Site-managed and landscape-managed species have known threats to their viability and if these are not managed effectively their populations could decline or they could become extinct. Iconic species have a history of high community interest and engagement, and there is an expectation that they will be conserved.

Data-deficient species are considered to be a second tier priority for investment due to existing key knowledge gaps. If these remain unfilled, they will inhibit the species' management, potentially leading to population decline or extinction. In the data-deficient stream, species will be prioritised for research based on their national and NSW conservation status as well as the likelihood that the outcomes of the proposed research will facilitate their effective management.

Partnership species, except for those listed as threatened nationally under the *Environment Protection and Biodiversity Conservation Act 1999*, are generally considered a third tier priority for management in NSW, considering that they are likely to be relatively abundant or not threatened in other jurisdictions. Partnership species listed as threatened nationally will be prioritised for investment based on the benefit, likelihood of success and cost of management of projects.

Experts have advised that investment in the targeted management of keep watch species is unlikely to provide any significant benefit to viability, so this stream is a low priority for investment unless threats increase.

Yellow-spotted bell frog. Photo: D. Hunter.

Site-managed species

Site-managed species can be successfully secured in the wild in NSW by carrying out targeted management actions on specific sites. The largest number of threatened species (405 species) are in the site-managed species stream.

The management objective is to secure these species in the wild in NSW for 100 years and prevent any decline in their conservation status under the *Threatened Species Conservation Act 1995*.

A species is included in the site-managed species stream if:

- it is not currently secure in the wild without management intervention
- it can be secured in the wild in NSW for 100 years through site-based management; native vegetation and other habitat management alone will not be sufficient to secure these species
- there is sufficient information about the species and its management needs to secure the species in the wild.

How will site-managed species be managed?

Conservation projects for site-managed species have been developed by a panel of experts with knowledge of the species' ecology. These projects describe the management actions required at specific, mapped sites, to achieve a 95% probability of having a viable population of the species in 100 years' time, and for the species to maintain its listing status under the *Threatened Species Conservation Act 1995*. Operational staff from public authorities and catchment management authorities have verified the estimated cost of implementing the proposed actions and their feasibility.

The key management sites for most conservation projects will not encompass the entire distribution of a species in NSW, nor all areas where conservation work is being undertaken by the NSW community. By limiting projects to the essential actions undertaken on the optimum number of management sites required to secure the species, limited resources can cover more species. It should be noted that for many species, particularly critically endangered species, the projects involve managing all known populations.

How will projects be prioritised?

Resources to manage threats to species are limited. To ensure the maximum number of species can be secured, funds must be spent in a cost-effective way.

Saving our Species establishes priorities for investment by calculating a priority score for each conservation project. This score is calculated by estimating the benefit the project would provide for the species, its likelihood of success, and the total cost of implementing the project, as per the equation:

$$\textit{Priority score} = \frac{\textit{Benefit x Likelihood of success}}{\textit{Cost}}$$

Benefit is calculated as the difference in the probability of the species having a viable population in the wild in NSW in 100 years with and without successful implementation of the project.

Likelihood of success is estimated for each action by asking:

- How likely is it that the action can be implemented?
- If the action is implemented, how successful is it likely to be in addressing the threat?
- If the threat is addressed, how well is the species likely to respond?

Standard cost estimates for management actions were developed using information on implementation costs of other programs. Where one action benefits a number of species on a particular site, the cost of that action can be shared. In this way, the cost of some projects will be reduced.

The only objective method for ensuring that benefits are maximised for the greatest number of species is cost-effective prioritisation. This approach is based on the Project Prioritisation Protocol developed by the Centre of Excellence for Environmental Decisions, University of Queensland. The approach is currently being implemented in New Zealand and has been trialled in Tasmania. For more information, see Joseph LN, Maloney RF and Possingham HP 2008, 'Optimal allocation of resources among threatened species: a project prioritisation protocol', *Conservation Biology* 23(2), pp. 328–338.

Once cost, benefit and likelihood of success have been assessed, a priority ranking from 1–5 is assigned to each project. Due to the uncertainty associated with the estimates of benefit, cost and feasibility, all the projects within a ranking should be treated as having equivalent priority.

Other considerations on whether to undertake a conservation project include capacity and knowledge to implement projects and existing or potential future levels of community involvement.

Investment in threatened species management will be made locally, even though the gains will contribute to statewide outcomes for each species. In the long-term, anyone will be able to fund a project or be involved in the management of a species. The priority ranking will help to inform anyone's decisions about the benefit, feasibility and cost of undertaking a conservation project.

A list of projects in each priority ranking and a technical report that provides more detail on the process of developing priority rankings for site-managed projects are available on the *Saving our Species* website: www.environment.nsw.gov.au/savingourspecies.

How can the community be involved in conservation projects?

The two examples below explain ways in which the community can be involved in conservation projects for site-managed species. More detailed information is available in 'Getting involved'.

Working together to save the yellow-spotted bell frog

The yellow-spotted bell frog is critically endangered in NSW. It lives along riverbanks in the southern tablelands of NSW. This frog is a good example of a site-managed species as its future can be secured through:

- entering into agreements with landholders to fence riparian areas to control grazing during winter
- working with local conservation groups to manage weeds on key sites
- working with local government to create new habitat on key sites.

Taronga Zoo also has a captive breeding program for this species and frogs from the program will be used to establish new wild populations.

Yellow-spotted bell frog. Photo: D. Hunter.

Working together to save the Tumut grevillea

Scientific name:
Grevillea wilkinsonii

Conservation status in NSW:
Endangered

Conservation status in Australia:
Endangered

This conservation project aims to conserve the Tumut grevillea in the long-term. The project was developed by experts who identified the necessary management sites and conservation actions required to conserve the species.

Two key sites have been identified in NSW. They are:

***Grevillea wilkonsonii*. Photo: J. Briggs.**

Gundagai

The Tumut grevillea has a highly restricted distribution on the NSW south-west slopes. This site covers 10 hectares on two adjoining private properties. This is the smaller of the two identified populations with only seven individual plants recorded.

Threats to the Tumut grevillea on this site include potentially degrading land management practices and its small population size which means there is a high risk that localised events could eliminate most of or all of it.

Immediate management action is required for this site. Such action includes negotiating with the landholders to supplement the existing population with additional plants and minimising the impacts of potentially damaging land-use practices on the species and its habitat by cooperating with the landholders to protect the species.

Goobarragandra in the Tumut regional area

The species' main occurrence is along a six-kilometre stretch of Goobarragandra River approximately 20 kilometres east of Tumut where about 400 plants are known. The 258-hectare site falls on private freehold land, Crown Land, a travelling stock reserve, and a small section of Kosciuszko National Park.

Project staff will build on twelve years of liaison with local landholders to minimise the impacts of grazing, manage weeds through physical and chemical site-based weed control and potentially develop voluntary management agreements. This population will be augmented through planting propagated seedlings.

For all sites, regular monitoring of species' abundance, extent and condition will be conducted to determine population trends through time. The extent and severity of threats will be monitored to assess the effectiveness of management actions.

Weeding to restore habitat for the threatened *Grevillea wilkonsonii*. Photo: J. Briggs.

Iconic species

Iconic species are important not only ecologically but also socially, culturally and economically and the community expects them to be effectively managed and protected.

The management objective is to secure these species in the wild in NSW for 100 years.

A species is included in the iconic management stream if it is highly regarded by the community – high regard is demonstrated by current and historical community interest and engagement in conservation of the species, and its cultural and economic importance.

Four species have been initially selected for the iconic species stream from across NSW:

- koala
- brush-tailed rock-wallaby
- southern corroboree frog (southern NSW)
- malleefowl (western NSW).

All these species have NSW recovery plans prepared for them and are listed in the *Environment Protection and Biodiversity Conservation Act 1999*.

Other threatened species are likely to be considered by the community as being iconic. The level of interest and work being done by the community on other threatened species will be used to inform which other species are allocated to this management stream in the future.

The koala is one of the program's iconic species. Photo: E. Veland.

How will iconic species be managed?

For the next three years, management of iconic species will be guided by existing recovery plans. An outline of each iconic species project is available on the website, and community participation in these projects is encouraged.

Saving the koala – an example of an iconic species project

Scientific name: *Phascolarctos cinereus*

Conservation status in NSW: Vulnerable

Conservation status in Australia: Vulnerable

The management of iconic species like the koala is guided by projects that consider community expectations and encourage local government and community participation.

This conservation project aims to reverse the decline of the koala in NSW; ensure adequate protection, management and restoration of koala habitat; and maintain healthy breeding populations of koalas throughout their current range.

Actions already under way

- Working with private landholders to protect and rehabilitate koala habitat, and establish regional habitat corridors.
- Assisting local government to identify and map koala habitat and prepare comprehensive koala plans of management.
- Better protecting koalas in national parks by managing wild dogs and designing hazard reduction burns to minimise impacts on koala habitat.
- Assessing the restoration of koala habitat, such as on the Liverpool Plains around Gunnedah, to provide guidance on restoration of habitat elsewhere.
- Working with koala rehabilitation groups to determine why koalas go into care.
- Undertaking community-based koala surveys to monitor change.

Planned actions for 2012–15

- Provide incentives to landholders to manage and improve priority koala habitat on their land.
- Identify koala habitat and threats and recommend mitigation measures for local government and the community.
- Evaluate the effectiveness of previous tree plantings, to better target on-site conservation action.
- Investigate where remedial actions can be most effective in providing drought refuges and reducing the impact of disease.
- Undertake community surveys to track changes in koala populations.
- Develop a standard approach to mapping koala habitat.

Key project partners

- Landholders and landholder groups
- Local government
- University of Sydney (School of Biological Sciences and Veterinary Science)
- University of Queensland (School of Geography)
- Koala rehabilitation groups

Data-deficient species

Not enough is known about data-deficient species for a specific conservation project to be developed for them. More information about their distribution, ecology and management is needed to enable them to be effectively protected.

The management objective is to address key knowledge gaps for these species so they can be transferred to another stream for management.

A species is included in the data-deficient management stream if there is insufficient information on the distribution, ecology or threats facing it to assign it to another stream.

It is not possible to know everything about a species and some areas of data deficiency will be inevitable for all species. However, where data limitations prevent the identification of sites, threats or appropriate management actions, the species will be deemed data-deficient. Species that are presumed extinct in the wild are also included in the data-deficient stream.

How will data-deficient species be managed?

Species action statements summarising key knowledge gaps will be drawn up for each species. Researchers from organisations such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO), universities, OEH and field naturalist groups can contribute to filling these gaps.

When the knowledge gap for a species has been addressed, it will be moved to another stream, generally the site-managed species stream. If the species is moved to this stream, an expert panel will be convened for it and a conservation project developed.

If 'presumed extinct' species are rediscovered, key knowledge gaps will be identified and addressed so the species can be effectively managed.

Investment in data-deficient species will be guided by:

- the feasibility of fulfilling stated knowledge gaps for the species
- the level of threat facing the species, that is, its conservation status under the *Threatened Species Conservation Act 1995* and the *Environment Protection and Biodiversity Conservation Act 1999*, with higher priority given to critically endangered and endangered species.

The pale imperial hairstreak butterfly is critically endangered in NSW. This striking butterfly inhabits open forests and woodlands dominated by brigalow (*Acacia harpophylla*), from northern NSW to Queensland. However, there is insufficient information on the management needs of this butterfly to inform a conservation project. Therefore, this species is allocated to the data-deficient species stream. Photo: B. Thompson.

Landscape-managed species

Landscape-managed species are distributed across large areas and are subject to threats across the landscape, most often habitat loss or degradation. Management of these species is therefore about protecting the broader landscape.

The management objective is to secure these species in the wild in NSW for 100 years.

A species is included in the landscape-managed species stream if:

- it is sparsely distributed across wide areas, without clumping or settling in recognisable, interacting subpopulations
- it is highly mobile, migratory or nomadic, making it difficult to identify a site where management might benefit the species
- it is impacted on by broadscale threats such as habitat loss and degradation, and relies on the provision of high quality habitat across large areas
- the program objective cannot be met through site-based actions alone.

How will landscape-managed species be secured?

These species are currently managed through:

- broadscale vegetation and habitat management programs
- control of major threats such as foxes
- land clearing controls regulated through the *Native Vegetation Act 2003* and the *Environmental Planning and Assessment Act 1979*
- water sharing plans, particularly for species in riparian and floodplain ecosystems
- programs to manage coasts, estuaries, coastal lakes and wetlands
- the management of national parks and reserves under the *National Parks and Wildlife Act 1974*.

Saving our Species will continue to develop an integrated approach for managing all landscape-managed species.

The masked owl is vulnerable to extinction in NSW. Its range extends over 90% of NSW, making it difficult to devise a site-based project that would successfully secure it. The owl depends on the provision of high quality habitat over vast areas of NSW, making it a good example of a landscape-managed species. Photo: B. Twist.

The greater sand plover is vulnerable to extinction in NSW. Its range extends along coastal areas from central Asia to Australia. Less than 10% of the national range of this species occurs in NSW. The greater sand plover is one of the species to which the *Agreement on the Conservation of African-Eurasian Migratory Waterbirds* – an international treaty – applies. Photo: C. Kiu, R. Cheng.

Partnership species

Partnership species have less than 10% of their population occurring within NSW. The future security of these species depends on populations outside NSW, where the species may not be threatened. Many partnership species are common in most of their range in other jurisdictions. Other state and territory governments are therefore better placed to lead the recovery, where required, of these species. OEH staff will participate in cross-jurisdictional national recovery programs when critical sites for management have been identified in NSW.

The management objective is to participate in recovery programs where this is required to secure these species nationally.

A species is included in the partnership management stream if less than 10% of its distribution and abundance is in NSW.

How will partnership species be managed?

OEH staff will continue to participate in cross-jurisdictional recovery programs.

Some partnership species that are listed under the *Environment Protection and Biodiversity Conservation Act 1999* have key populations in NSW that warrant management, for example, they are important breeding sites or population numbers are in decline. A conservation project will be developed using the same methods outlined for site-managed species to direct investment to these sites. These species will remain in the partnership stream and any projects developed for them will not be prioritised alongside site-managed species projects but will be prioritised against other partnership species projects.

The musty leek orchid is a keep watch species because, although it is reasonably rare, it is conserved in national parks and has no known active threats. Photo: T. Pterostylis.

Keep watch species

Keep watch species require no immediate investment, either because they are naturally rare with few known critical threats facing them, or are more abundant than previously assumed when they were listed as threatened. For these reasons they are predicted to be secure in the wild and are not a priority for management. The NSW Government will keep a watching brief on these species.

The management objective is to maintain the security of the species in the wild in NSW for 100 years.

A species is included in the keep watch management stream if:

- it is rare but is not affected by known critical threats
- it is rare but is well protected in conservation reserves
- survey data has indicated that it is more abundant or less threatened than previously assumed.

How will keep watch species be managed?

The NSW Government will not allocate resources to managing keep watch species as there is no evidence that there would be any benefit in doing so. However, OEH will store information on new threats or changes to the abundance and distribution of these species as they become available. All available information on each species will be examined during the three-yearly program review (see 'How will the program's impact be measured?').

Whenever evidence indicates a decline in the population or an intensification of threats, the species will immediately be transferred to the site-managed species stream.

Species that are more abundant or less threatened than assumed at the time of listing will be recommended to the NSW Scientific Committee as potential candidates for removal from the *Threatened Species Conservation Act 1995*.

Although 59 of the 95 species in this management stream are also listed under the *Environment Protection and Biodiversity Conservation Act 1999*, they are not considered to be under immediate threat in NSW. In view of this, investment in these species in NSW is not likely to contribute to securing these species nationally.

How will endangered populations be managed?

An endangered population is a population of a species that is in danger of extinction. The *Threatened Species Conservation Act 1995* lists 45 endangered populations in NSW.

In some cases, where an endangered population is important to the statewide security of a species, the site where the population occurs may be included as a management site in a site-managed species conservation project.

Eventually, endangered populations that are not included in such projects will have a site-based 'population project' developed using the same methodology as for site-managed species. Projects will be developed with the aim of securing the endangered population in NSW.

How will threatened ecological communities be managed?

Threatened ecological communities are listed under the *Threatened Species Conservation Act 1995*. They are unique communities of plants and animals that occur together, that have declined significantly since European settlement and that face significant threats to their survival.

There is a range of existing programs for managing threatened ecological communities (Table 2). These programs will continue. Options for systematically and transparently planning actions for, and prioritising investment in, these communities at a state level will be considered in the next stage of *Saving our Species*.

The malleefowl is one of *Saving our Species'* iconic species. Photo: M. Irvin.

Threatened ecological communities such as littoral rainforest, currently managed under various conservation programs, will be managed under *Saving our Species* in the future. Photo: J. Turbill.

The southern corroboree frog is one of the most critically endangered species in NSW, and is also one of the program's iconic species. With perhaps fewer than 120 individuals left in the wild, there is a very high chance that this species will become extinct in NSW without help. Establishing captive populations of this species that store enough genetic variability to allow it be reintroduced into the wild will act as a last line of defence. Photo: D. Hunter.

How will key threatening processes be managed?

The *Threatened Species Conservation Act 1995* lists key threatening processes that impact on threatened species and communities, and requires that the NSW Government plan, prioritise and implement actions to reduce the impact of these threats.

Threat abatement plans have been developed for some significant threats that impact heavily on a broad range of threatened species. Such plans have been developed for threats such as the European red fox and bitou bush and boneseed. They contain specific actions to control these threats on high priority sites. Actions and sites for site-managed species have been aligned as much as possible with threat abatement plan actions and sites.

Genetic storage for high risk species

Around 6% of threatened species are critically endangered, meaning they face an extremely high risk of extinction in NSW in the immediate future. These species will be managed according to the stream they belong to. For example, site-managed species at risk of extinction will be managed through conservation projects.

Where the risk of extinction is very high, it is also prudent to 'insure' against future extinction by storing a representative sample of the genetic variation of the species in a way that allows for reintroduction if extinction in the wild occurs. Genetic storage can be either storage of preserved genetic material (i.e. seeds) or maintaining the species in live, captive populations. For some species, the technology is not yet available to store embryonic cells. For these species, living populations are the only genetic storage method available.

Botanic gardens and zoos have been informed of critically endangered species that require genetic storage. The proportion of high risk species that have their genes safely stored will be reported as an indicator in the program review after three years (see 'How will the program's impact be measured?').

Getting involved

Conservation groups and government agencies often work together to conserve threatened species such as the long-nosed potoroo. Photo: J. Dingle.

Saving our Species needs community involvement to succeed. Most of the funded conservation projects are collaborative efforts enhanced by the participation of those with interest in and knowledge of one or more threatened species, such as local groups concerned with saving a specific species, bushcare and Landcare groups, and national park volunteers.

The NSW Government is investing in cost-effective conservation projects and supporting landholder and community involvement in the projects. However, the task of saving all species is large and will only be achieved through the cooperative efforts of as many people and organisations as possible.

People interested in doing conservation work can search the website for projects in their area. Here, a volunteer takes part in a program to tag the rare and threatened eastern bristlebird at Jervis Bay. Photo: N. Gaymer.

Saving our Species website

A website has been developed to support *Saving our Species*. Through the website, people can get involved in the program in two ways.

Those wishing to undertake conservation work can:

- search the 'getting involved' web page for opportunities to volunteer for conservation work
- search the 'conservation projects' page to view key management sites and actions that have been identified to conserve site-managed species in their local area
- subscribe to receive updates on the program and conservation projects to participate in.

Those already working in threatened species conservation can:

- become a registered user – they can then share information on the conservation activities they are undertaking with communities and land managers across the state, report on the progress of their actions, and view information to help them prioritise their actions and investment in threatened species conservation
- view research requirements for data-deficient species.

The website will also:

- enable participants to store monitoring and reporting information that will help OEH to assess the impact of all participants' work and improve methods of management and protection – this information will also be used by conservation practitioners to facilitate adaptive management and provide better conservation outcomes
- generate reports for reviewing program performance
- assist OEH to coordinate threatened species management over time and across government and landholder boundaries.

In the future, the website will also recognise contributions being made to *Saving our Species* by 'species champions'. Such recognition may include:

- promoting the efforts of individuals who or groups that manage a species project
- recognising public and private investors who donate funds to secure a threatened species for 50 years.

Visit the *Saving our Species* website: www.environment.nsw.gov.au/savingourspecies.

Organisations and individuals working to save NSW threatened species

People in all areas of our country are working to save threatened species in NSW, including:

- private land managers
- Indigenous stakeholders and landholders
- volunteers in conservation, bushcare and Landcare groups
- conservation organisations and community groups
- academic and scientific institutions such as the CSIRO and universities
- Taronga Zoo and the Botanic Gardens Trust
- corporations and local businesses
- schools and educational institutions
- charitable foundations
- NSW public land management authorities such as the National Parks and Wildlife Service
- local government
- catchment management authorities
- the Australian Government.

Scientists and field naturalists will be able to get involved in the program by researching data-deficient species. Photo: T. Pritchard.

The tawny crevice dragon's future can be secured through different organisations and people acting to conserve the species on specific sites. Photo: S. Sass, EnviroKey.

Volunteers working to regenerate native vegetation on Montague Island. Photo: S. Cohen.

- **Local conservation groups, schools and local businesses** can search the website to find a site in their area they can work on.
- **Corporate investors and charitable foundations** can invest in the security of a site-managed threatened species for 50 years or the recovery of one of the state's iconic species.
- **Catchment management authorities and local councils** can identify threatened species for action in their local area, as well as potential partners and funding opportunities.
- **Private landholders** can enter into a conservation agreement and receive funding for managing a species, or can allow a species to be managed on their land.
- **Public and private land managers** can participate in conservation projects where these are compatible with the uses of the land.
- **Research organisations** can identify and fill key knowledge gaps so data-deficient species can be managed.
- **OEH** can incorporate conservation projects into national park management, with the help of volunteers.
- **Decision makers, government agencies and project managers** can gain information to help them prioritise their own local and regional actions, find out what is happening in threatened species conservation management across the state and coordinate management across government and landholder boundaries.

Each year, OEH will work with potential partners to identify projects that can help to save a species. Partnerships will be established that will make a real difference to the security of the species in the wild.

If you have a threatened species on your property you are encouraged to participate in *Saving our Species*. However, the program is completely voluntary. Landholders with management sites will be offered support, including funding, to enter into an agreement to undertake management actions on their land.

The development of *Saving our Species*

***Boronia granitica*. Photo: M. G. Jefferies.**

The NSW Government has made a clear commitment in NSW 2021 to better protect threatened and iconic species and review the *Threatened Species Priorities Action Statement* (PAS) to make it easier for community groups and businesses to get involved in threatened species conservation.

Saving our Species has been developed in response to that commitment, and is a new approach to threatened species management in NSW. It builds on:

- the 2011 review of the PAS
- consultation with a wide range of experts
- advice from the NSW Scientific Committee, the Natural Resources Commission and leading academics.

Comments and feedback are now invited from the public on amendments to the PAS (see next section).

Review of the Threatened Species Priorities Action Statement

The PAS has guided efforts to recover threatened species since 2007. OEH reviewed the PAS in 2011 to evaluate its effectiveness. This review found that significant and worthwhile conservation activity was being undertaken across all levels of government as well as by private citizens, community groups and non-government organisations. Unfortunately the extent to which many of the actions benefited threatened species was unclear.

The review recommended a number of improvements including:

- adopting an explicit management and prioritisation framework; even though there may have been prioritisation of species and actions at local and regional levels, the PAS did not prioritise at a state level, and did not specify where recovery actions should occur, how much they would cost or who would implement them
- improving opportunities for direct community participation in conservation activities
- improving coordination of the efforts of all organisations and individuals involved in threatened species conservation
- better monitoring of program performance over time.

Actions to conserve the smoky mouse will be undertaken through *Saving our Species*. Photo: L. Broome.

The complete report, including its eight recommendations, is available on www.environment.nsw.gov.au/savingourspecies.

Saving our Species delivers on all these recommendations, and its strategies and projects are designed to be the new PAS for NSW.

The *Threatened Species Conservation Act 1995* sets out the legal requirements for the content of the PAS and the procedures for its amendment. Specifically, the Act requires the public exhibition of the amendment for 30 days and an invitation to the public to comment. Details of the amendment are available at www.environment.nsw.gov.au/threatenedspecies/SpeciesRecoveryAndThreatAbatement.htm or visit level 14, 59 Goulburn Street, Sydney to inspect a printed copy.

Comments can be made:

- by writing to Amendment to the Priorities Action Statement, Office of Environment and Heritage, PO Box A290, Sydney South NSW 1232
- online at www.environment.nsw.gov.au/threatenedspecies/pasamendment.htm
- by emailing pasamendment@environment.nsw.gov.au.

The deadline for comments is **Friday 14 February 2014**.

How does *Saving our Species* work with other initiatives?

There are many people working to save threatened species across NSW. *Saving our Species* will complement their efforts and identify where future conservation actions will most benefit threatened species.

Through the process of prioritisation identified in 'Prioritisation across management streams', some current projects will no longer be a priority for government investment and, over time, resources will be directed to species and locations where the greatest difference can be made.

These decisions do not prevent non-government organisations, private companies or individuals from undertaking other threatened species projects. In recognition of efforts to secure all threatened species in the wild, OEH staff will continue to work with stakeholders on these projects.

Conservation of threatened species in NSW requires a diverse range of strategies and programs (Figure 3). *Saving our Species* is OEH's key recovery strategy, and will work across the areas of threat abatement, ex situ conservation, support for conservation on private lands and other complementary programs.

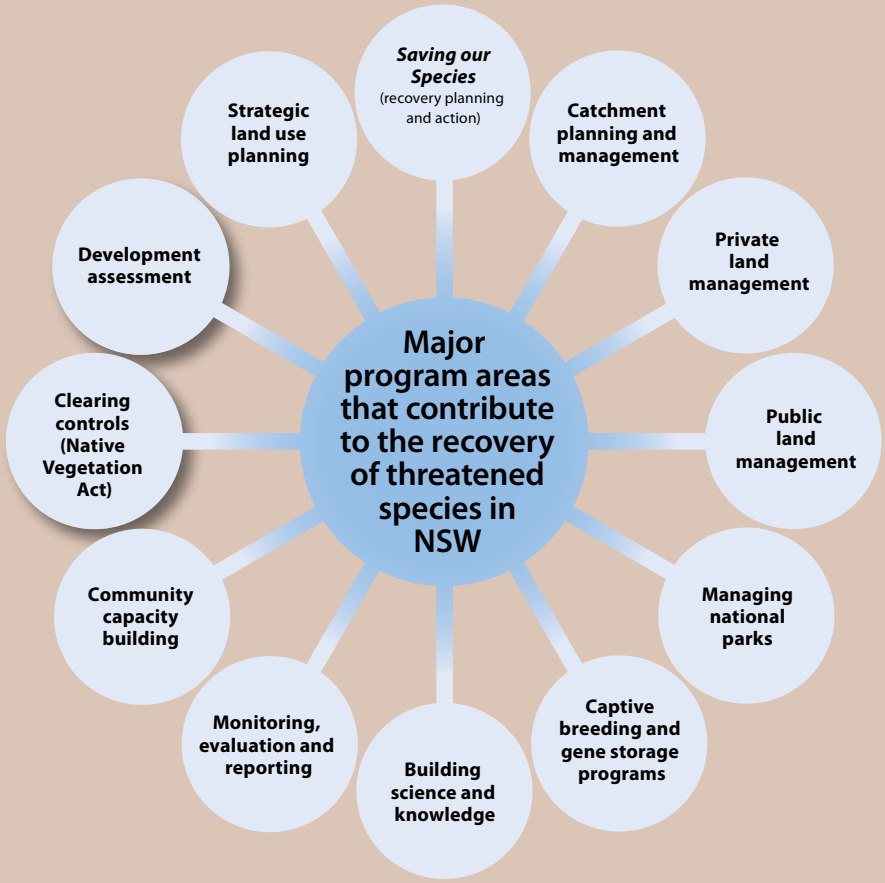

Figure 3 Major program areas that contribute to biodiversity conservation in NSW

There are times when a species is under immediate threat of extinction and the risk can be reversed cheaply and easily. In these cases, actions need to be taken quickly, and are best identified and acted on regionally. While *Saving our Species* directs investment at the state level, regional managers will have the flexibility to carry out cost-effective actions that prevent the imminent extinction of species.

How will the program's impact be measured?

Sooty tern. Photo: F. and K. Starr.

Adaptive management is a key feature of *Saving our Species*. This means that projects will be flexible and will adapt as new information on threats, species responses, and action effectiveness is gained.

Information on the effectiveness of project actions will be used to ensure these actions are having positive outcomes for threatened species. If this is not the case, actions will be amended so they are more effective. Annual and three-yearly reviews will help to improve the management and protection of threatened species.

Amendments might include new actions to manage new and emerging threats on a site, changes to actions as new information or new control methods become available, or the addition of new sites requiring management.

Information on species trends on management sites will be collated for all projects. It can take many years for species to respond to management actions and response times may vary considerably. Species experts will provide advice on the likely species response times to assist with interpretation of results and to help modify or replace actions.

How will information be collected?

Every funded conservation project for site-managed and iconic species will be monitored to assess:

- whether the actions were completed
- how successful the actions were in reducing the threat
- how well the species responded.

Project leaders and partners will enter these results on the website.

For species in other management streams, the following information will be collected and stored on the website:

- the changing status of key knowledge gaps for data-deficient species — participants will be able to report when a knowledge gap has been filled
- new information about keep watch species, and information relating to a decline or a new threat that may trigger its reallocation to a different stream
- relevant information where monitoring occurs as part of a project for partnership species.

How will the impact be reported?

Individual species reports that provide a snapshot of progress will be available annually from the website. The community, contributors and investors can use these to track the impact of their contributions on a species.

An annual report will also be published on the website, which will:

- provide details of activities carried out during the year, including activities in each management stream
- give details of the local government area, catchment management authority area or local land services board region where the work is being undertaken.

An annual review will focus on action completion and threat mitigation, recognising that it is not appropriate to interpret species trends in the early stages of project implementation. Key performance indicators for the annual review include:

- the number of species in each management stream and the number of species that have moved between streams
- the approximate proportion of investment in each management stream and total estimated program investment
- the number of species that are being actively managed
- the number of selected projects that have been completed for the year, from the site-managed, iconic and data-deficient species streams
- the number of selected projects that have been partially implemented, from the site-managed and iconic species streams.

A review of program performance will be carried out every three years and published on the website. The review will report on the response of species to actions that have been undertaken and the effectiveness and uptake of the overall *Saving our Species* program.

Additional performance indicators for the three-yearly review include:

- the proportion and number of all threatened species across all streams that are on track to be secure in the wild for 100 years
- the number of external participants in the program
- the level of investment in the program (including funds and number of days on which projects were implemented).

The technical report on the *Saving our Species* website provides more detail on the monitoring, evaluation and reporting aspects of the program.

Conclusion

Bush stone-curlew. Photo: G. Fergus.

Saving our Species is a major step forward in the important journey of protecting the threatened species of NSW. Its design draws on the skills and knowledge of many environmental experts. By prioritising projects and engaging the community, the program will allow as many species as possible to be secured, enriching the biodiversity of NSW for future generations.

We invite everyone to be involved in this important journey.

Sarcochilus fitzgeraldii. Photo: A. and B. Larsen.

www.environment.nsw.gov.au/savingourspecies