Saving our Species: a framework for setting priorities

NSW GOVERNMENT

Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images, or names of deceased persons in photographs or historical content.

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Protecting nature in New South Wales

In New South Wales, over 1,000 native plants, animals and ecological communities are now threatened with extinction. Many ecosystems are showing signs of collapse.

The key threats to species and ecological communities are feral animals and weeds, habitat loss and modification, larger, hotter and more frequent fires, climate change, pathogens and diseases.

New South Wales is home to some of the world's most unique plants and animals. It also faces some of the nation's most significant challenges from diseases and feral predators. Fortunately, there is a plan for halting extinction.

The NSW Government works with an independent scientific committee to assess the risk of extinction for species, the risk of local extinction for populations of species, and the risk of collapse for ecological communities. Those that are found to be at risk receive legal protection through listing as threatened species, populations or ecological communities (Table 1).

Table 1 At risk of disappearing forever

At risk of disappearing forever **Our laws protect nature in 3 different ways**	
	**Threatened species** Plants, animals, fungi and algae at risk of extinction.
	**Threatened populations** Populations of a species that is not at risk of extinction across the state, but that has a high risk of being eliminated from a local area.
	**Threatened ecological communities** Native plants, animals and other organisms living together in an interdependent community which is under threat. If parts of the community are lost, or if there is a change in the way the parts of the community interact, it can collapse, disappearing from the landscape.

There are 3 levels of risk under the *Biodiversity Conservation Act 2016*: vulnerable, endangered or critically endangered (Figure 1). Vulnerable species are at risk of being lost in the next 100 years. Endangered species are at risk of extinction in the next 20 years. Critically endangered species are at risk of extinction in the next 10 years. Threatened ecological communities share similar risks, but rather than going extinct, they are described as collapsing, meaning that parts of the ecological community may survive, but no longer function as a community.

Figure 1 Measuring the risk of extinction

Once listed, the NSW Government has a comprehensive system for evaluating what these threatened species, populations and ecological communities need, and how to secure as many as possible through the Saving our Species program. The program brings together action across government agencies, conservation organisations and individual people.

Legislation also provides ways to protect biodiversity by recognising key threatening processes. Key threatening processes are threats that have negative affects on more than one species, population or ecological community and that can cause additional species, populations or ecological communities to become threatened. This framework will refer to threatened species, threatened populations, threatened ecological communities and key threatening processes as 'entities'.

Saving our Species

Saving our Species is a biodiversity conservation program focused on practical on-ground action to help species recover and to secure their long-term future. No other program in Australia – government or non-government — provides an equally comprehensive, coordinated and cost-effective approach to threatened species management.

The program provides strategic guidance, supporting people across New South Wales to deliver cost-effective conservation action. This includes targeted strategies for managing threatened species, populations and ecological communities, and key threatening processes using the best available information. It brings together volunteers, scientists, businesses, community groups and other NSW Government agencies as partners. It aims to inspire the people of New South Wales to contribute to threatened species conservation.

Saving our Species uses principles of cost-effectiveness, scientific rigour, transparency and accountability to guide investment. It aims to secure species in the wild through scientific knowledge and innovation, and by supporting the sharing of traditional ecological knowledge to care for the environment.

Why we need to set priorities

Between 2001 and 2024, the number of species, populations and ecological communities listed as threatened in New South Wales grew from around 350 to over 1,000. In part, this increase reflects better knowledge of our state, and a concerted effort to measure the risk of extinction. However, the current lists of threatened entities in New South Wales still most likely underestimate the true number of entities at risk of extinction (Nicol et al. 2019; Alfonzetti et al. 2020; Gallagher et al. 2021; Legge et al. 2022). This underscores the importance of acting to prevent extinction, and highlights the scale of the challenge.

Prior to Saving our Species, the approach to conservation involved preparing detailed recovery plans for each threatened entity, most commonly species, with the aim of ensuring that the species would be able to be removed from the threatened species list (that is, be 'delisted'). The number of threatened species grew much more quickly than plans were able to be prepared. As a result, 12 years after the passage of the *Threatened Species Conservation Act 1995* (repealed), only 10% of listed species had a plan (Brazill-Boast et al. 2018).

The Biodiversity Conservation Act (the Act) was introduced to address the long-term decline of biodiversity and to maintain a healthy, productive and resilient environment into the future. Saving our Species is designed to fulfil the requirements of the Biodiversity Conservation Program (Part 4 Division 6 of the Act). The Act requires the program to consist of a framework to guide the setting of priorities for implementing strategies. This document outlines the framework for setting priorities, supported by

the program's management stream, monitoring and evaluation frameworks (OEH 2013, 2015, 2017a, 2017b, 2017c, 2018a, 2018b; DPIE 2019a, 2019b, 2019c).

A framework for setting conservation priorities

Without the right framework in place, resources may be spread inefficiently, so that a little is done for a lot of species, but not enough to prevent extinction. Alternatively, only the most well-known species might receive enough resources to be saved from extinction, while other species, populations and ecological communities are lost.

Saving our Species is a comprehensive framework for conserving threatened species, populations and ecological communities, and minimising the impacts of key threatening processes. The program was created to bring a focused approach that is action-based rather than process-driven, and to add greater coordination and accountability. Saving our Species focuses on on-ground action to halt extinction. It provides a comprehensive plan for conservation for every listed species, population and ecological community in the state. It consists of targeted projects, transparently prioritised to bring the greatest benefit per dollar spent.

Saving our Species is guided by the following principles:

- On-ground interventions – Practical on-ground actions to conserve species, populations and ecological communities and secure their long-term future.
- Informed by science – Interventions are based on the best knowledge available, and adaptive management ensures that they change in response to new information.
- Long-term investments – A long-term commitment of funding is required to give threatened species, populations and ecological communities the consistent support necessary to be secure in the wild.
- Transparent prioritisation – Comprehensive prioritisation supports local actions that contribute to lowering the risk of extinction for as many species, populations and ecological communities as possible across the state.
- Collaborative partnerships – Working together across government, community groups and business partners to make the conservation of threatened species, populations and ecological communities successful and sustainable for generations to come.
- Aboriginal participation – Recognising the custodianship of land, culture and traditional knowledge and the rights and aspirations of Aboriginal peoples and communities, and integrating these values into program priorities and into the practices of the program and partners.
- Climate change – The program recognises anthropogenic climate change as a key threat to many species and communities, and is considered in the framework's approach and actions to secure species in the long-term.

To achieve its objectives, Saving our Species brings together 3 kinds of action: on-ground action, science and knowledge, and partnerships and engagement. All are unified by strategic oversight and planning.

On-ground action

On-ground actions are conservation interventions delivered at places that are critical to the survival of threatened species, populations and ecological communities. These actions lead to better habitat and less impact from threats at those sites, and to a better chance of survival for the threatened entities at those sites. In order to direct action, Saving our Species also invests in strategic planning. This supports the program to operate at scale, working towards the security of hundreds of species.

Science and knowledge

A key component of securing threatened species, populations and ecological communities is understanding what they need. Saving our Species uses science and research to fill critical knowledge gaps to make sure entities survive. It also recognises the critical importance of traditional ecological knowledge and provides opportunities to support the application of long-term or detailed Aboriginal wisdom and practices in threatened species conservation. For more detail, see *Saving our Species science and research strategy* (DPE 2023). Scientific research also supports excellence in strategic decision-making across the program.

Partnerships and engagement

There can be no long-term security for threatened species, populations or ecological communities without the support of the community. This includes all the diverse communities in New South Wales, but particularly Aboriginal communities, recognising that caring for Country is of critical importance to many Aboriginal people, and supports physical, social and spiritual wellbeing (AIATSIS 2011). The Saving our Species program aims to establish and strengthen enduring and inclusive networks of conservation experts, government entities, businesses and local communities to work together in partnership with the program for the conservation of threatened species, populations and ecological communities in New South Wales.

A strategic, cost-effective approach

Saving our Species sets priorities according to 2 main principles:

1. projects should be cost-effective
2. the selection of which projects to fund should be strategic, maximising conservation benefit across our state.

A cost-effective approach

Cost, benefit and feasibility

The first principle for setting program priorities is cost-effectiveness: this ensures that conservation resources are put to use where they will have the greatest impact. Cost-effectiveness is not based only on cost, that is, it is not the least expensive projects that will always be resourced. Rather, the trade-off considered is:

- will the project **benefit** the entity?
- how difficult will it be to achieve the benefit, that is, is the project **feasible**?
- what will the project **cost**?

Both benefit and feasibility are considered together, that is, if an action has potential benefit, how likely is that benefit to be achieved? The potential positive outcome of any action has to be weighed against the possibility that it will not be achieved, due to low feasibility. This is considered against the cost of doing the action. Projects with a high benefit and high feasibility relative to their cost are highly cost-effective. If an action has a high potential benefit, but would be very difficult to do, it has low feasibility and a lower priority (Figure 2).

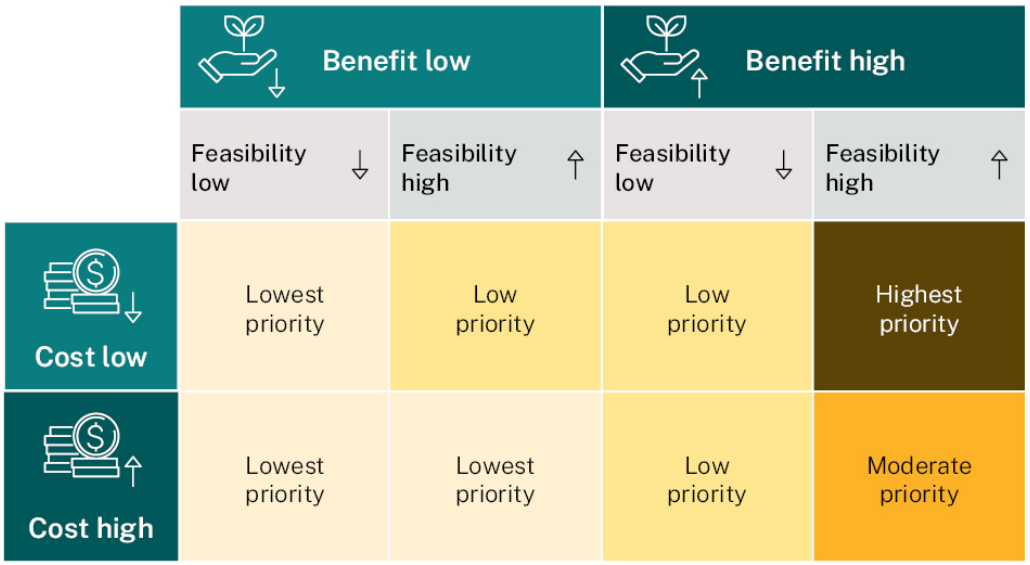


Figure 2 **A conceptual framework for setting cost-effective priorities**

Minimum but sufficient actions: A cost-effective versus recovery approach

When considering the conservation needs of threatened species, populations and communities, it is tempting to focus on all actions that might be beneficial. The urgency of each entity's plight makes it seem reasonable to want to do everything in our power to improve its situation. There may be other conservation actions which if taken would benefit the species. However, by taking these actions we would forfeit the opportunity to ensure the survival of another species. When designing strategies, Saving our Species works with experts to understand the minimum requirements to ensure that the species is secure from extinction.

Although the projects use minimum requirements, these requirements must also be sufficient. The actions and sites must be enough to secure the species in New South Wales for the next 100 years. All critical actions are included at every site that is critical to securing the species. A species is considered secure when there is a 95% probability of having a **viable population** of the species 100 years from now, and the species' threat status under the Act does not decline.

A '**viable population**' is a population where:

- all threats that can be predicted and occur regularly are controlled
- the size of the population is sufficient to avoid problems such as inbreeding or extinction from a stochastic event (Traill et al. 2010; Brook et al. 2011)
- the population trajectory is stable or growing (i.e. recruitment exceeds mortality)
- there is sufficient available habitat for the population to persist and grow.

This equates to reducing a given species' 100-year extinction risk to 5% (OEH 2013).

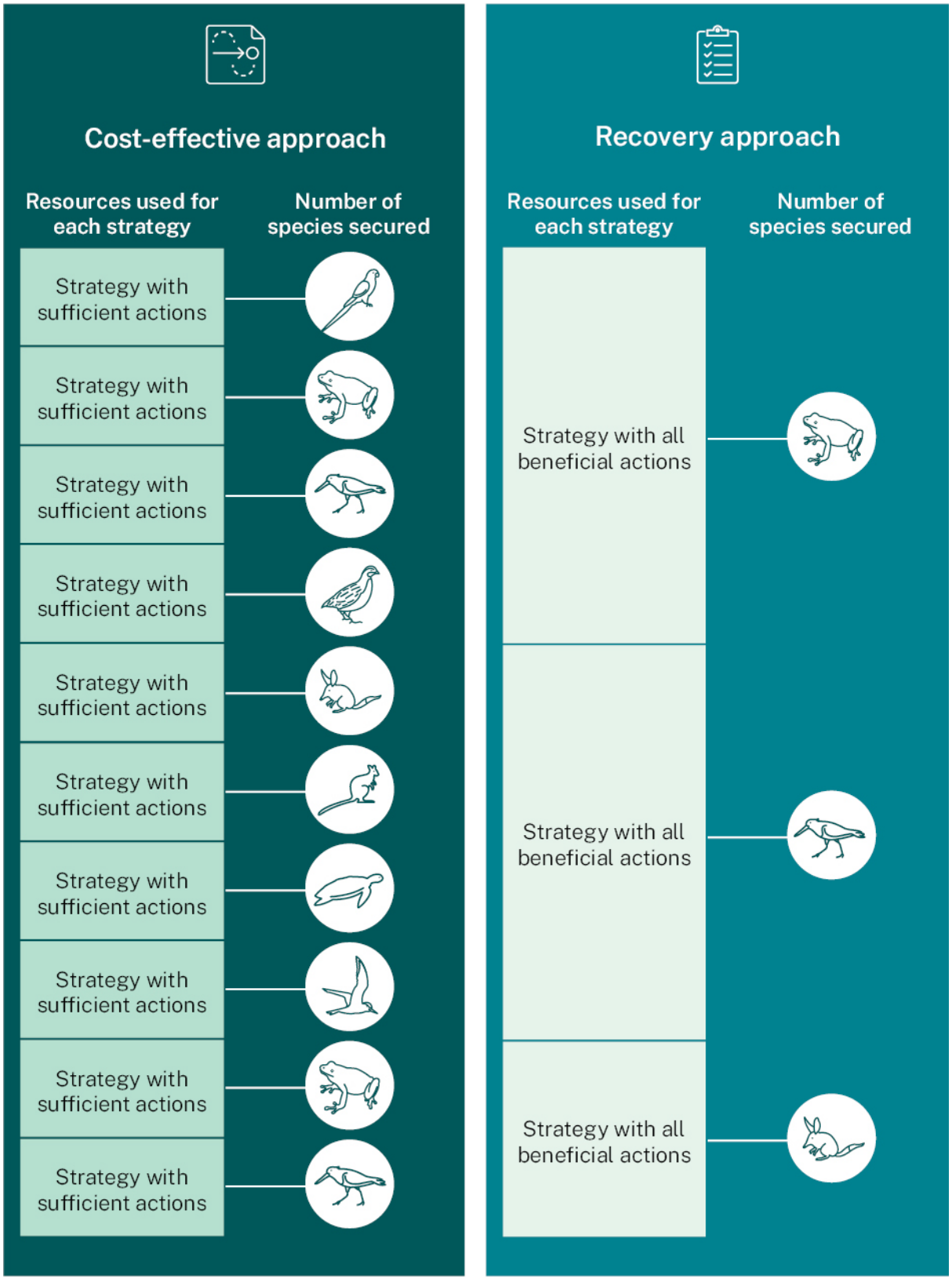


Figure 3 **Cost-effective management versus complete recovery**

Figure 3 shows the difference between a cost-effective approach, and an approach aimed at full recovery and delisting of a species. In the cost-effective approach, all projects include the minimum set of actions sufficient to secure a species, and in the recovery approach, projects include all beneficial actions. Projects that include the minimum actions sufficient to secure the species allow more entities to be secured. In the example illustrated in Figure 3, the cost of one 'Strategy with **all** beneficial actions' project is much greater than the cost of a project with a 'Strategy with **sufficient** actions' (i.e. the minimum set of actions). The result is that fewer species can be secured. There is clear connection between creating cost-effective projects and a strategy to maximise the number of entities secured. By creating projects that are minimal, but sufficient, we can secure more entities.

Focusing on outcomes

Central to the Saving our Species approach is a focus on the on-ground actions that lead directly to positive outcomes for species, populations and communities. One of the principles of creating minimal-but-sufficient projects is a focus on direct action, that is, **acting** is preferred to **finding out more** (provided we know what to do). An approach that prioritises action over research and monitoring is more likely to lead to recovery (Buxton et al. 2020).

Maximising impact through a strategic approach

Prior to the development of the Saving our Species framework, decisions about which projects to resource and where were often made in isolation. Under this approach, decision making tends to reflect either local priorities or urgent needs. By contrast, a strategic approach is one that:

- allows all stakeholders to efficiently contribute
- considers statewide objectives
- takes a long-term focus.

The program-wide objective 'to maximise the number of threatened entities that are secure in the wild in New South Wales for 100 years' describes this approach and sets a target against which our effectiveness can clearly be measured.

Prioritisation takes place at many levels

Determining whether an entity is a priority for on-ground conservation action is a process with many steps. These include:

- listing species, populations and ecological communities across the state by the NSW Threatened Species Scientific Committee
- finding the right conservation approach for each entity through assignment to a management stream
- developing a conservation strategy to document specific conservation needs

- setting priorities for investment between management streams and conservation strategies through project prioritisation
- monitoring and evaluating the results of conservation to make changes when needed.

These steps are outlined in Figure 4 and discussed in more detail below.

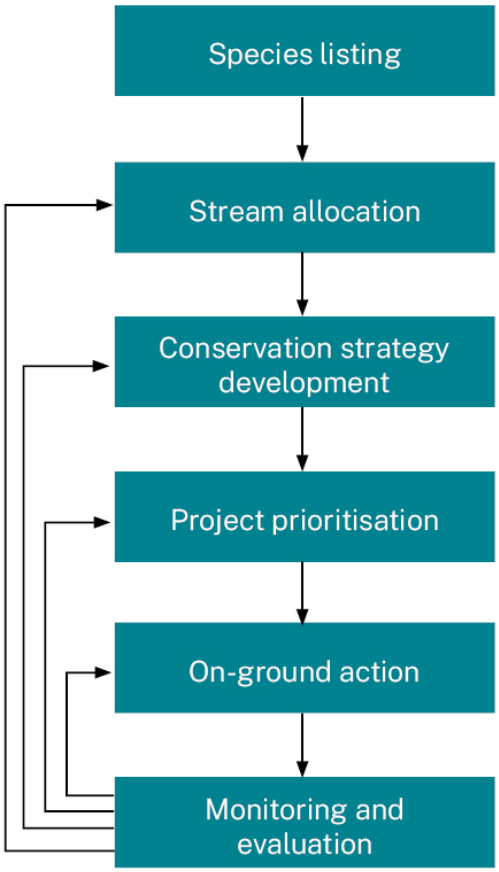


Figure 4 Prioritisation takes place at many levels

Listing species, populations, ecological communities and key threatening processes

At a statewide level, many species, populations and ecological communities are potentially in need of conservation action. However, only those entities listed by the NSW Threatened Species Scientific Committee are considered by the Saving our Species program.

There is a public nomination process by which species, communities and populations are considered for listing (see link to *Nomination* webpage in the 'More information' section). The NSW Threatened Species Scientific Committee determines processes and criteria by which nominated species are prioritised for assessment and review. Criteria for listing threatened entities are determined by the Act, and align with the International Union for Conservation of Nature's *IUCN Red List categories and criteria* (IUCN 2012).

Finding the right conservation approach: management streams

With over 1,000 listed entities, understanding the conservation needs of each one can be challenging. Saving our Species has developed 9 management streams (Table 2) to target specific needs, based on what is known about the biology and ecology of each entity. Once listed, each entity is allocated to a management stream. Streams help narrow down the kinds of conservation actions needed for each species. This in turn allows Saving our Species to develop conservation strategies for a large number of species more efficiently. There is also a management stream specifically for key threatening processes.

Complementing the management streams are 2 types of approaches to site selection: **site-based** or **widespread**. For entities with a site-based approach, management focuses on specific locations where conservation actions can be taken to mitigate threats. These are Saving our Species priority sites. For entities which need to move, migrate or disperse, it is not possible to select a limited number of sites that will protect them from extinction. Instead, Saving our Species outlines priority areas, within which there may be patches of critical habitat, refugia or habitat corridors that support the entities' survival. Under widespread management, Saving our Species may also complement general priority areas with specific priority sites that support key populations, corridors or refugia.

Table 2 Conservation approaches: management streams

Finding the right conservation approach: Saving our Species management streams	
 Bolivia Hill boronia. Adam Fawcett/ DCCEEW	**Site-managed species** **Action at specific sites will secure the species; around 60% of threatened species are in this stream** Most species at risk of extinction occur at just a few locations. If there are healthy populations at these sites, we can feel confident that these species are secure from extinction. Site-based management aims to find the critical sites needed to ensure the species will be secure into the future, then take the actions needed to ensure those populations survive. Site-managed projects are managed using a site-based approached.
 Superb parrot. Helen Fallow/DCCEEW	**Landscape species** **Widespread species affected by broadscale threats; around 10% of threatened species are in this stream** Species that are widely distributed, highly mobile, highly dispersed or at risk of extinction from broadscale threats are allocated to the landscape management stream. Many are best conserved by managing threats associated with habitat loss or degradation at a landscape scale. Landscape species are predominantly birds, mammals, frogs and reptiles. Landscape species are managed using a widespread approach.

Finding the right conservation approach:
Saving our Species management streams

Brush-tailed rock wallaby. Michael Van Ewijk/DCCEEW

Iconic species

Species highly valued by the community

The iconic stream consists of threatened species that are highly valued by the community. There is a strong expectation that Saving our Species manages these species. The species also help to generate community awareness and support for conservation more broadly. Iconic species may be managed using either a site-based or widespread approach.

Southern right whale. Bronwyn Kershaw/DCCEEW

Partnership species

Species that occur primarily outside New South Wales and are managed by collaborating with other jurisdictions

Some species cannot be effectively secured from extinction in New South Wales alone. Animals and plants that have less than 10% of their distribution (the area in which the species is found) in the state are allocated to the partnership species stream, and need to be managed in partnership with other jurisdictions. Many are migratory, highly mobile or have distributions that cover multiple states. Partnership species may be managed using either a site-based or widespread approach.

Gibraltar grevillea. Lachlan Copeland/DCCEEW

Keep watch species

Species where threats have been mitigated and monitoring is the key action

Some species do not need immediate on-ground intervention to secure them from extinction. These species are managed through a keep watch approach, with periodic monitoring to ensure declines are not missed. Ideally, all threatened species would be able to move into this stream if the right changes are made to protect them.

Pterostylis riperia. Luke Foster/DCCEEW

Data-deficient species

Focus on research or survey to better understand species' needs with the goal to find out enough to move into one of the other streams

Data deficient is the starting point for many threatened species. Although it is clear that they are at risk of extinction, little is known about where they are found or their conservation needs. The focus is research or survey to find out how and where they can be secured in the wild. Once needs are known, the species moves to another stream for ongoing management.

Finding the right conservation approach:
Saving our Species management streams

Coastal emu population. John Turbill/DCCEEW

Threatened populations of a species

Isolated populations with a high conservation value

Populations of animals or plants may be listed as threatened if they are isolated, distinct or have significant conservation value. Threatened populations of a species are managed using a site-based approach.

Byron Bay Dwarf Graminoid Clay Heath Community. Norman Graham/DCCEEW

Threatened ecological communities

Native plants, animals and other organisms living together in an interdependent community that is under threat

Ecological communities are a type of biodiversity that consists of a group of species living together. Ecological communities are also defined by their environments, such as being located close to the coast or in the mountains. If parts of the community are lost, the community can collapse, disappearing from the landscape. Threatened ecological communities can be managed using either a site-based or a widespread approach.

Lantana eradication. Rosie Nicolai/DCCEEW

Key threatening processes

Widespread threats affecting multiple species and communities

Key threatening processes are threats that have a significant impact on threatened entities and could cause additional species to become threatened. A strategic approach to mitigating key threatening processes prevents their impacts, and targets knowledge gaps that will contribute to mitigating the threats at a large scale.

Each management stream has its own framework document which outlines the approach to conservation strategies for that stream. For more details see the *Saving our Species framework* webpage.

Assigning entities to management streams and setting stream priorities

The flow chart in Figure 5 explains the process that is used to assign threatened entities to the appropriate management stream.

Saving our Species prioritises investment both within and between management streams. The highest priority streams are those that deliver measurable outcomes for threatened entities, considering both conservation benefit and likelihood of success.

The **site-managed species** stream is the highest priority as these species can be secured in the wild through targeted on-ground actions. This stream also includes many of the most threatened entities (i.e. critically endangered and endangered).

The **iconic species** stream is also a high priority and receives a significant investment by the program as there is a high community expectation they are conserved and most have complex management needs. The program applies to the Minister to have an entity included in the iconic stream.

The **landscape species** and **threatened ecological communities** streams are the next priority. These entities can be more resource intensive to manage and are more challenging to deliver measurable outcomes for. Most of the species in the landscape stream are listed as vulnerable.

The **data-deficient species** stream is a medium priority because, although the projects do not directly affect threatened species trajectories, investing in these projects enables the species to transition to other management streams and receive on-ground management.

The **key threatening process** stream is also a medium priority as some targeted investment by Saving our Species can deliver significant threat management outcomes. However, most investment in threat abatement is delivered within the individual species projects or by natural resource management programs.

Partnership species are a lower priority for investment as only a subset of these entities have important conservation areas within New South Wales.

Populations and **keep watch species** are the lowest priority as they have the lowest conservation benefit from on-ground investment. For threatened populations, the species is not currently at risk of extinction and keep watch species have been assessed as not requiring on-ground action to be secured in the wild.

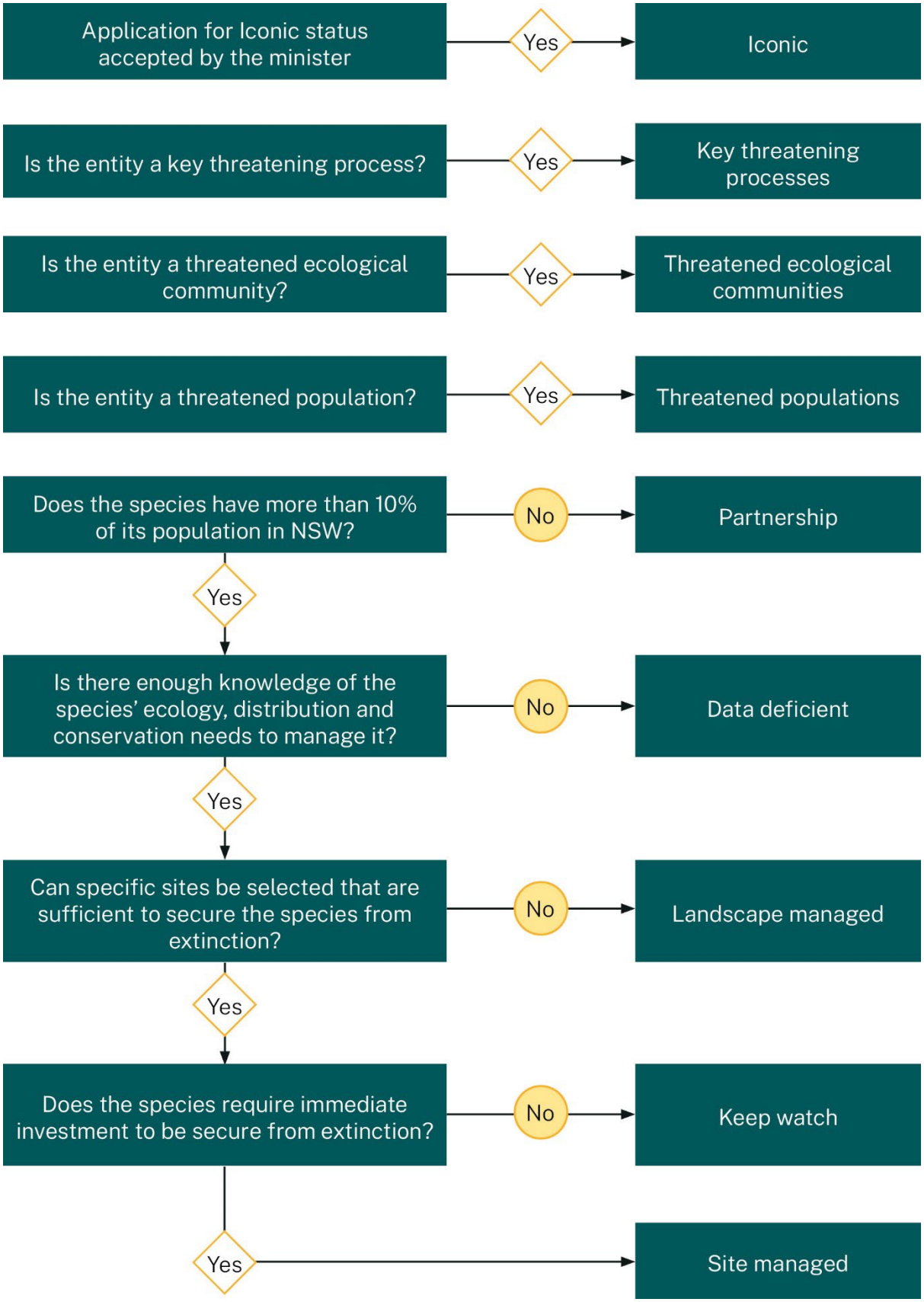


Figure 5 **Assigning entities to management streams**

Developing conservation strategies

Conservation strategies for species, populations and communities

Under the Act, each species, population and ecological community must have a conservation strategy within 2 years of listing. But conservation strategies are more than a legislative requirement; they are fundamental in enabling Saving our Species to deliver comprehensive conservation across the state.

Designing efficient strategies helps to meet the program's objective of maximising the number of threatened entities secured in the wild. Each strategy determines the minimum set of critical on-ground actions needed to secure those entities. Conservation strategies lay out a specific set of actions to be carried out over a given time frame. These actions, along with their costs, make up the information necessary for comparing and prioritising them.

Conservation strategies for key threatening processes

Unlike other entities, the Act does not require conservation strategies for key threatening processes. For many threatened species, populations or ecological communities, the effects of key threatening processes are addressed directly in their conservation strategy. However, there are also times when it is cost-effective to invest in research to improve management, preventing a threat from entering the state, or preventing the spread of a threat within the state. Saving our Species develops conservation strategies for key threatening processes when there is likely to be a significant impact or risk reduction from targeted investment in that strategy. Conservation strategies are developed for key threatening processes when:

1. The key threatening process significantly inhibits survival, function or reproduction of threatened species, populations or ecological communities, or poses a future risk of critically impacting threatened species, ecological communities or priority biodiversity values in New South Wales.
2. Targeted actions are likely to contribute significantly to the abatement or prevention of those impacts (OEH 2017c).

Strategy development

The prioritisation of sites, threats and actions takes place as part of developing conservation strategies for each entity. Each management stream has an individual framework for strategy development, which guides:

- selection of management sites and priority areas
- justification for sites chosen
- identification of critical threats (versus those which are not essential)
- determination of critical actions (versus all possible actions, including the principle of prioritising on-ground actions).

Strategies are developed at a statewide level, drawing on existing knowledge, in the form of published reports and peer-reviewed literature, and consultation with site and threat experts, as well as experts on the entity.

Strategies aim to include all actions needed to secure the entity in New South Wales and to minimise the impacts of the key threatening process. Where this is not known, they outline the next steps to be taken to determine this. The use of standardised cost data allows the cost of doing these actions over a specific time frame to be estimated, which serves as the basis for comparing projects using project prioritisation approaches.

Strategies are living documents that are continually updated in response to new developments in our understanding of the ecology and management of each entity and key threatening process. The online *Public register of Saving our Species conservation strategies* is a public register which can be accessed by anyone (see link in 'More information' section). This transparency is intended to align conservation across New South Wales to prevent extinction.

Setting priorities for investment

Designing conservation strategies for every entity and key threatening process allows Saving our Species to understand conservation needs comprehensively across the state. Without this information, it would not be possible to compare different conservation projects and aim to ensure the security of the maximum number of entities across the state. Because conservation needs are so great, it is likely that the funds available for conservation will always be less than those needed to secure all threatened species, populations and communities. Saving our Species takes a strategic approach, prioritising effort and investment to maximise the number of threatened entities secured. The process of making these decisions is project prioritisation. Saving our Species defines projects as the implementation of conservation strategies, that is, the management and delivery of the actions outlined in the strategy. Species and community projects have a beginning and an end; and the delivery of a project may lead to updates in the strategy through adaptive management. Project prioritisation uses transparent, objective criteria to determine which entities are resourced for action at any time.

Projects may be full implementation of a strategy, or they may be targeted implementation of a small part of the strategy that is designed to meet a key need over a short timescale. Because the program provides a conservation strategy for each threatened species, population and ecological community, potential projects can be compared in a standardised way.

The 'Setting priorities' section below describes prioritisation in more detail.

Monitoring and evaluation: How should projects respond to changing conditions and new evidence?

Saving our Species is an outcome-focused program. Monitoring and evaluation are necessary if we are to understand if our on-ground actions are having an effect. An

efficient monitoring, evaluation and reporting cycle is essential for effective conservation and management of threatened entities (Legge et al. 2018; Robinson et al. 2018; Scheele et al. 2018; Lindenmayer et al. 2020). Prior to the development of the Saving our Species program, while many worthwhile activities were implemented for threatened species, the extent to which some of these activities achieved successful outcomes was unclear. Saving our Species is supported by a dedicated database for reporting outcomes, which provides the foundation for responding to changes in the environment and the success of management.

Adaptive management

Conservation strategies provide a starting point for projects, however, adaptive management is a key part of implementation (OEH 2018b). Ongoing monitoring, and evaluation of monitoring data, contribute to continually redeveloping and refining the conservation actions and management defined in the strategy. Each site is evaluated annually using a traffic light system to align with and link to annual planning, budget forecasting and reporting processes (OEH 2018b). If any indicator is assessed as being outside of the target range (i.e. not on track, which is scored as a red light), this triggers a project review. Adaptive management at other levels of the program is also crucial (Figure 4). Entities may change management streams, or conservation strategies may be revised, which may result in changes to prioritisation. For example, conservation could become more urgent, leading to higher benefit, and the entity being prioritised over other projects. Alternatively, feasibility may be shown to be lower than was previously estimated, leading to a lower prioritisation for that project.

Saving our Species also provides for the review of conservation strategies through the Saving our Species Technical Group. This group of experts provides feedback and guidance when there is a proposed change to a species' management stream, or when major changes are suggested for a conservation strategy.

Setting priorities

The setting of priorities for implementing strategies is a key focus of this prioritisation framework and fundamental to delivering the Saving our Species program. The goal of the project prioritisation process is to ensure the program delivers the best possible investment in conservation across the state. Engagement in the prioritisation process requires participants to contribute to the shared goal of distributing a pool of resources to achieve maximum conservation gain.

Prioritisation principles

Saving our Species prioritisation at all levels of the program is underpinned by the principles of conservation benefit (including extinction risk), cost-effectiveness and feasibility. These core principles form the basis of project prioritisation across all streams. As an additional measure of cost-effectiveness, the program also considers spatial complementarity — where one action benefits multiple species. This increases program efficiency by identifying projects that can share resources.

Saving our Species recognises that maintaining biodiversity is a critical consideration of prioritisation. Biodiversity is maintained at a statewide level by conserving species richness by preventing extinctions of species. The program also aims to enhance biodiversity between species by considering the evolutionary diversity and functional importance of species. Considering evolutionary diversity enables the program to conserve the most unique species. Considering functional importance enables the program to conserve species that play an important role in the ecosystem on which other species depend.

Prioritisation is primarily designed around ecological principles to meet the program objective of maximising the number of threatened species secured. However, decisions around which species to invest in must be made within the social and cultural context. As part of prioritisation, the program also considers opportunities and risks related to community value, partnerships, resourcing, and involvement of Aboriginal people. The weighting of these principles is reviewed by the program at the commencement of each funding cycle.

Project prioritisation cycles

There are 3 project prioritisation cycles: the major 5-year cycle for focus projects, a yearly cycle for short-term projects, and schedules and triggers for monitoring projects.

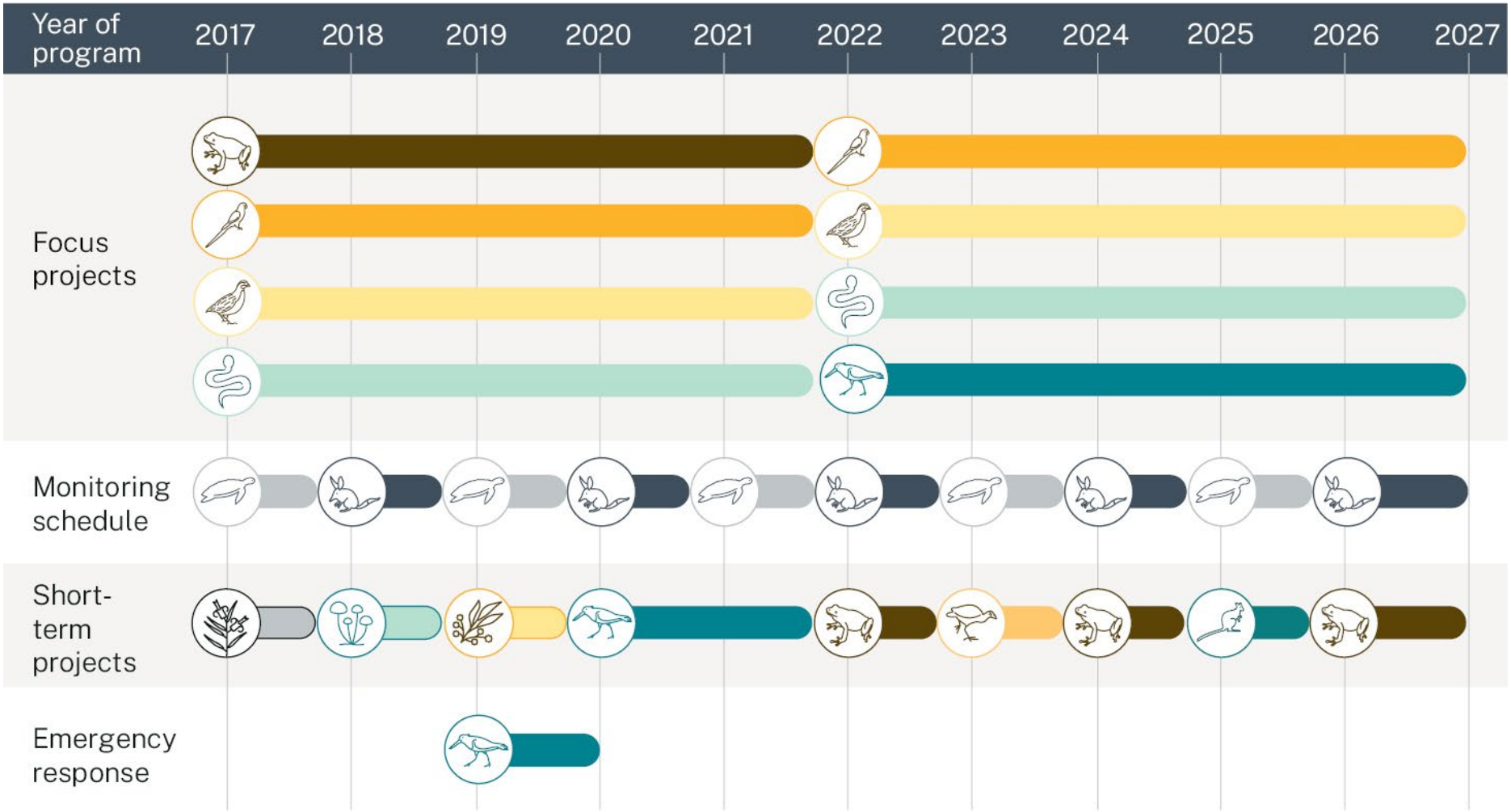


Figure 6 **An overview of the project prioritisation cycles**

Focus projects: 5-year cycle

Project prioritisation is most effective when the maximum number of entities are considered concurrently. This makes optimal use of available funding in reaching conservation outcomes for multiple species, populations or communities. Conservation projects require a window of stable funding to allow for long-term planning in response to slow natural systems. Under Saving our Species, project prioritisation takes place on a major cycle once every 5 years. The prioritised projects are '**focus projects**'. The majority of Saving our Species' on-ground funding goes to focus projects.

The remaining funding each year is then allocated to short-term projects and a monitoring schedule. Figure 6 provides a model of how the 3 parts of this cycle function. Boxes A and B provide examples for 2 species shifting from one project type to another.

Short-term projects: yearly cycle

Short-term funding is allocated each year to projects where a single, short-term commitment can make a significant contribution towards the conservation needs of the species. These are '**short-term projects**'. They include species in need of conservation actions following an environmental event such as storm or fire, or species whose needs are poorly known and need survey or research, such as those in the data-deficient management stream.

An additional role for short-term projects is to support action between prioritisation cycles. Saving our Species has an emergency fund to support entities at risk of immediate extinction or collapse through an immediate **emergency response**. Following an emergency response, short-term projects can support ongoing action each year until the species, population or community can be supported as a longer-term focus project.

The most important criterion for determining whether a short-term projects is appropriate is that the project will have a meaningful ecological impact in a short timeframe. Prioritisation for short-term projects considers the principals of benefit, feasibility and cost.

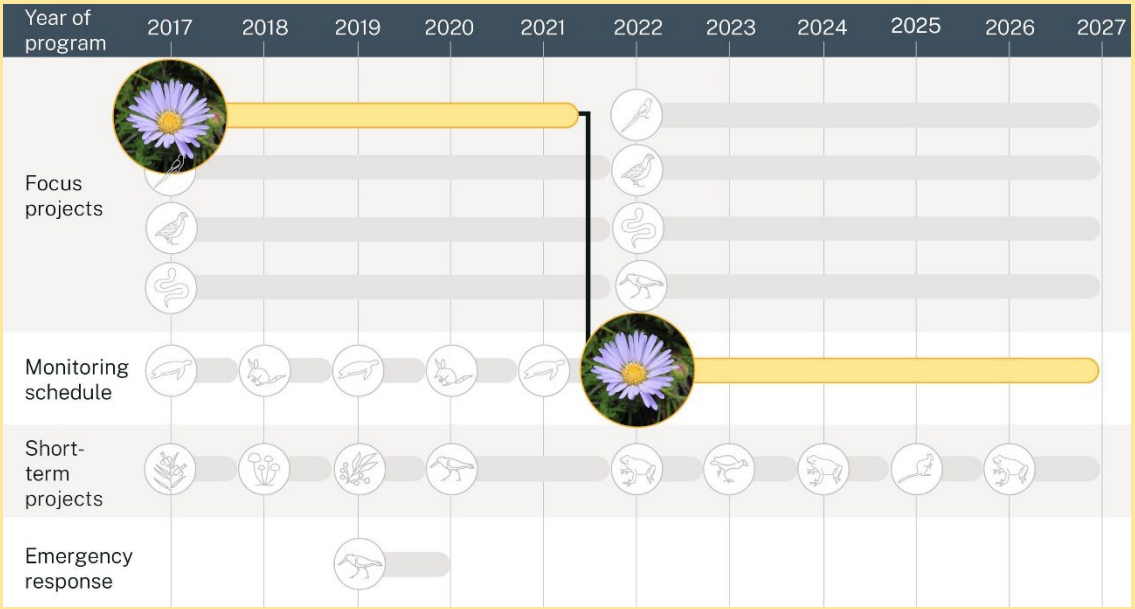
Monitoring schedule: triggers for monitoring

The **monitoring schedule** provides a way to check on species, populations and ecological communities that are not under active management. The monitoring results inform decisions around the entities' future management needs or provide the data needed for delisting. Scheduled monitoring is designed to be simple in nature and does not provide the detailed information about population status and structure that might be required as part of a long-term intervention, such as those supported by focus projects. Instead, scheduled monitoring collects just enough information to detect declines that might require increased action to prevent extinction.

Monitoring schedules consider factors such as frequency (how often monitoring is required to detect change), triggers (environmental cues likely to lead to peak conditions or detectability), and urgency (risk of extinction). The highest priority for monitoring each year are species, populations or ecological communities where

environmental cues have triggered detectability, particularly if those cues are rare or infrequent.

Box A: Species moving from more management to less: Mauve burr-daisy (*Calotis glandulosa*)

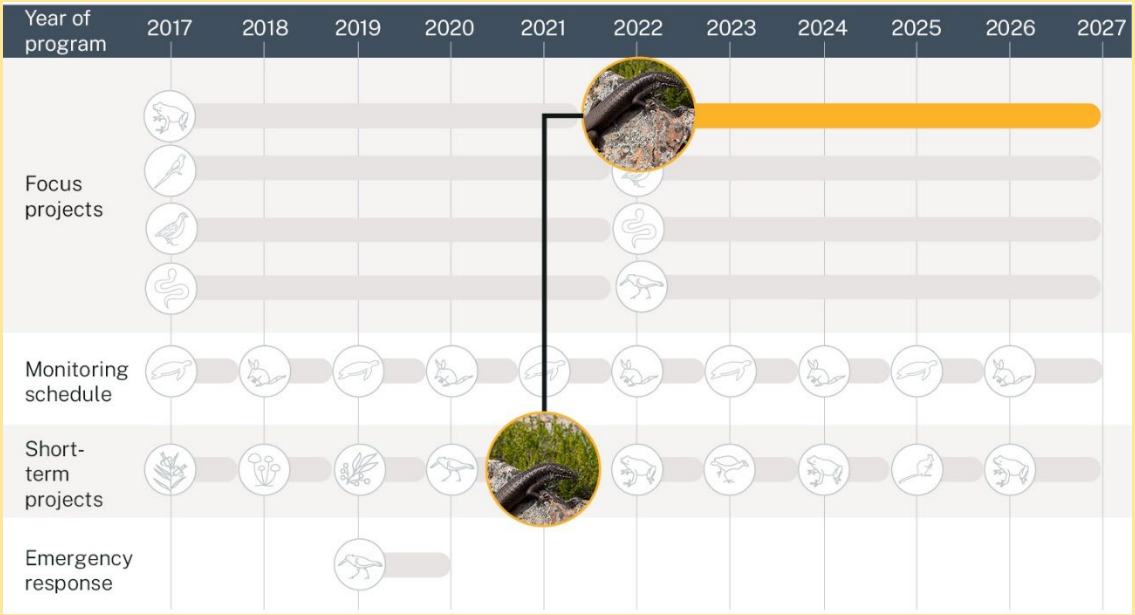


Mauve burr-daisy was actively funded (a focus project) between 2017 and 2021.

In 2022, the species was stable at all current Saving our Species sites and no longer required intensive monitoring or active management.

As such, the species was not chosen as a focus project for 2022–26, but periodic monitoring will be scheduled to catch possible declines in the condition of its habitat or the number of plants.

Box B: Species moving from less management to more: Kaputar rock skink (*Egernia roomi*)



Scientists discovered that the skinks in Mt Kaputar National Park were a separate species in 2019, and they were listed as a critically endangered species in New South Wales in 2021.

Because this is a new species, it had never been previously funded as a priority under Saving our Species.

It lives only on mountain peaks near Mt Kaputar. As the climate gets warmer, it needs to be protected from hotter temperatures and more frequent fires.

As a newly listed species with a very restricted range, providing conservation funding for Kaputar rock skink is a high priority for Saving our Species. Kaputar rock skink was chosen as a focus project for 2022–26. This shift from a short-term project to a focus project is illustrated above.

Decision science supports project prioritisation

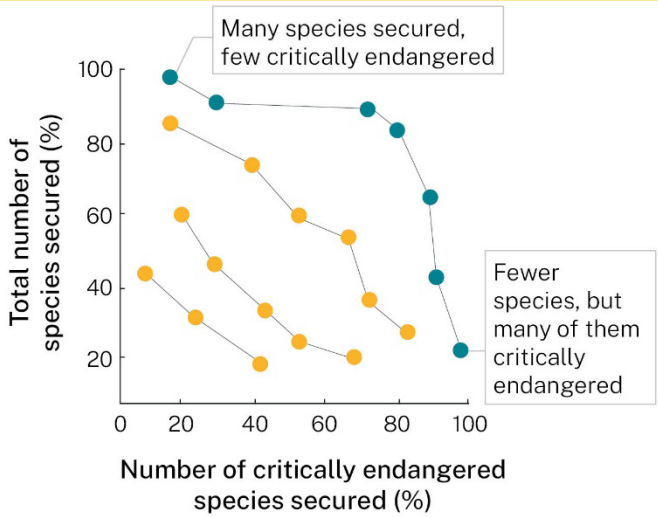
Decision science is an approach that looks for better ways to use available information to identify where we can have the greatest impact. Decision science is becoming an important part of conservation in many parts of the world (Margules and Pressey 2000; Wilson et al. 2007; Carwardine et al. 2008). Approaches that help simplify decision making are particularly useful when scaling up to make decisions about a large number of entities at once (e.g. Brazill-Boast et al. 2018). The Saving our Species program uses decision science to identify options that best meet its conservation objectives and prioritisation principles. Decision-support tools (described below) are designed to support this process. The evidence and options provided by decision-support tools are reviewed by experts and put into a strategic context by decision-makers before final decisions are made.

Making decisions using multiple decision-support tools

Setting priorities in conservation is a multi-objective problem: there is no single measure of the best entities to resource. Instead, multiple different objectives must be considered at the same time. For example, cost is an important objective. Another important objective is conservation benefit. Unfortunately, it is not possible to have the best of everything: how much we have of one thing will place a constraint on how much we can have of another thing. When we consider more than one objective, our goal is to get the best outcome possible for both objectives at the same time.

Box C shows the approach Saving our Species takes to choosing the best solution for multi-objective problems.

Box C: Understanding multi-objective problems

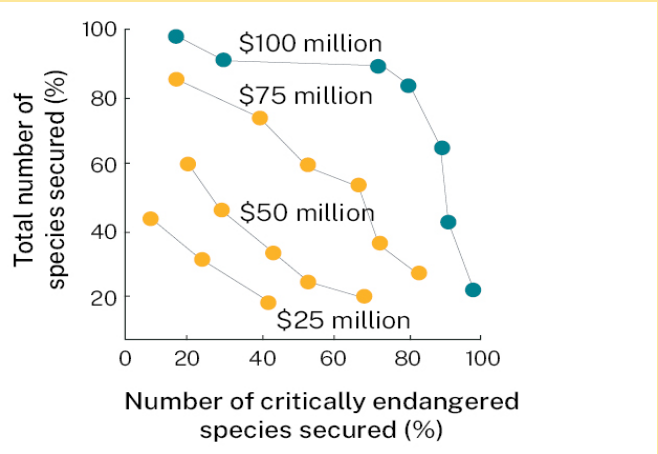


Many problems in conservation are multi-objective problems — they involve trade-offs.

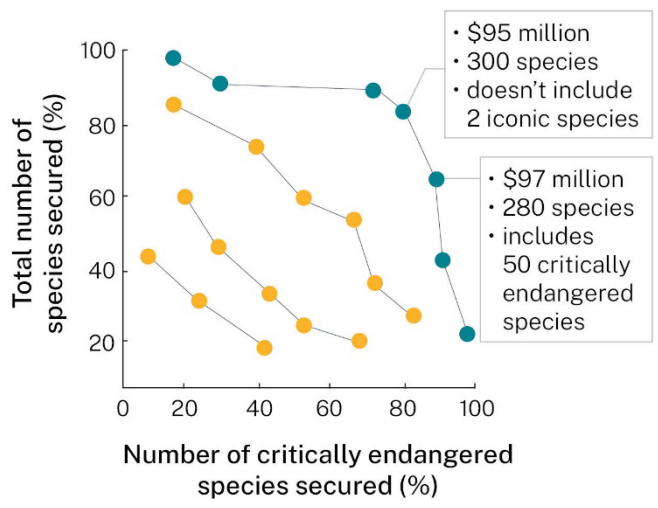
For instance, it would be good to secure both the maximum number of species possible and as many critically endangered species as possible. In practice, this is not possible, because critically endangered species need more intensive — and more expensive — conservation actions.

When 2 objectives trade-off against one another, a diagram can be used to show which solutions offer the best trade-offs.

Every coloured dot on the diagram represents a possible group of species that can be selected for on-ground conservation action.



If it is necessary to work within a certain budget, a line can be drawn that connects all the best solutions for different budgets (e.g. $25 million up to $100 million).



Diagrams can help visualise trade-offs in a way that makes it clear what the best options are, given the existing constraints, such as budget.

This kind of visualisation supports Saving our Species to choose the group of species (represented by the coloured dots) that best balances more than one objective.

It also allows the program to compare other factors to select the best solution overall. For example, do you want to resource iconic species with complex conservation projects, or critically endangered species at high risk of extinction? The decision taken affects the number of species that can be secured.

Decision-support tools

Saving our Species uses a range of decision-science tools to support project prioritisation. These tools are continually improved and additional tools are incorporated as the science advances. Examples of decision-support tools and analyses used by the program include the Conservation Hotspots Tool, DiversiPhy, Site Centaur, and Persistence in Landscapes modelling.

Conservation Hotspots Tool

The Conservation Hotspots Tool for project prioritisation was developed in partnership with CSIRO's Land and Water division. This tool uses a process known as integrated spatial prioritisation. It is designed to find areas where a single action will benefit multiple species. These overlapping areas are known as complimentary sites. Standardised costs are used to make sure that both new and existing projects can be compared together. Species with no complementarity are selected on the basis of providing the greatest benefit at the lowest cost. The result maximises the number of 'hotspots' where actions benefit multiple other species, while still including other species with high conservation needs.

DiversiPhy

Evolutionary diversity is one way of measuring biodiversity, as each species holds a unique evolutionary heritage and some species hold a particularly large part of this heritage, having only distant relatives. Some of New South Wales's most well-known species are often referred to as 'ancient', such as the Wollemi pine (*Wollemia nobilis*) or plains-wanderer (*Pedionomus torquatus*). Many people are familiar with the idea that a species can be a living fossil. Not all people are aware that this 'uniqueness' or 'ancientness' can be measured in terms of the millions of years of unique evolutionary history that have led to a particular species. DiversiPhy offers a prioritisation approach for NSW threatened species that is based on conserving the maximum amount of evolutionary heritage. The tool incorporates both New South Wales's listed threatened species, and all known species of tetrapods (amphibians, reptiles, birds and mammals) and vascular plants (ferns, conifers and flowering plants).

Site Centaur

Site Centaur is a decision-support tool that facilitates the selection of optimal management sites for threatened species. Site Centaur helps conservation planners answer the questions: How many sites do we need to manage? and Which sites should they be? Site Centaur employs multi-objective optimisation to provide decision-makers with a small set of highly optimal solutions. Expert context can then be brought to the decision table to make the final site selection decision. Combinations of potential sites are compared based on a range of in-built and user-elicited data describing populations, estimates of management effectiveness, future climate suitability and environmental representativeness. The tool can be used interactively during the site selection process when developing conservation strategies, which form the basis of project prioritisation.

Persistence in Landscapes Project

Threatened fauna species with widespread distributions and large home ranges cannot be secured within well-defined sites, making conservation for these species a challenging task. The Persistence in Landscapes Project helps Saving our Species identify priority areas now and under future climate scenarios to support landscape species.

The Persistence in Landscapes Project analysed 75 of the 111 landscape species Saving our Species is currently working to conserve in New South Wales. The species-specific outputs include sets of maps or grids predicting landscape capacity for each species over the next 50 years, as well as individual species forecasts. These identify where species' populations can persist through expected geographic shifts to their climatic envelopes due to projected climate change. They highlight the location of refugia, that is, important areas that have supported occupancy by threatened fauna from pre-industrial times and are expected to continue supporting relatively high densities of species into the future. In addition, these forecasts inform us that with targeted management, such as translocation or creation of habitat linkages, some species may have the potential to adapt to climate change impacts by occupying new areas.

Implementing the prioritisation framework

This framework and the program's conservation strategies are designed to be implemented by both government and non-government partners. The framework can inform decisions for the direct allocation of the Saving our Species budget as well as investment in threatened species by related programs and organisations. Detailed processes for delivering the prioritisation framework through the allocation of the Saving our Species budget are set out in the program's implementation plan. This includes setting the top-down budget allocation to management streams.

The program uses a combination of decision science analysis and project evaluation processes to determine which projects to fund. The need for project proposal development is related to the specificity of the conservation strategy in each management stream and the funding model available to the entity. For example, as conservation strategies in the site-managed stream specify all the actions and sites needed to secure the entity in New South Wales, the strategies can be prioritised directly. Whereas for strategies that are broader in scope (e.g. landscape species and key threatening processes), an additional project development step is required prior to prioritisation to define the site-specific actions and outcomes.

Saving our Species has a range of different funding models for investing in species projects. All management streams are eligible for funding under one or more of the following models (Table 3):

- focus projects – site based
- focus projects – widespread
- pilot projects
- short-term projects
- monitoring projects
- key threatening processes projects.

In addition to these funding models, the program also delivers on-ground projects through targeted science and research funding, the co-investment program and external partner investment. For all funding models, the program convenes a representative panel to review projects and supporting information and recommend a final list of priority projects. The Saving our Species Board endorses the priority list with final approval by the program's executive sponsor.

Consultation

In order to integrate tools into practice, decision-support tools are first used without constraints, to get a clear picture of what optimal outcomes would look like based on available data alone. These initial outcomes are then provided to teams of on-ground species experts for consultation. Species experts are able to make recommendations relative to information that has emerged recently (for example, a recent fire impacting a

population) or that cannot be incorporated into tools (for example, local knowledge of requirements to access a potential conservation site.) These constraints are then returned to the prioritisation team, who use these constraints to re-run tools and produce new lists of recommendations. Multiple recommendations are compared by a decision-making group known as the governance group (Figure 7). The governance group includes people with threatened species expertise from across the program, as well academic experts.

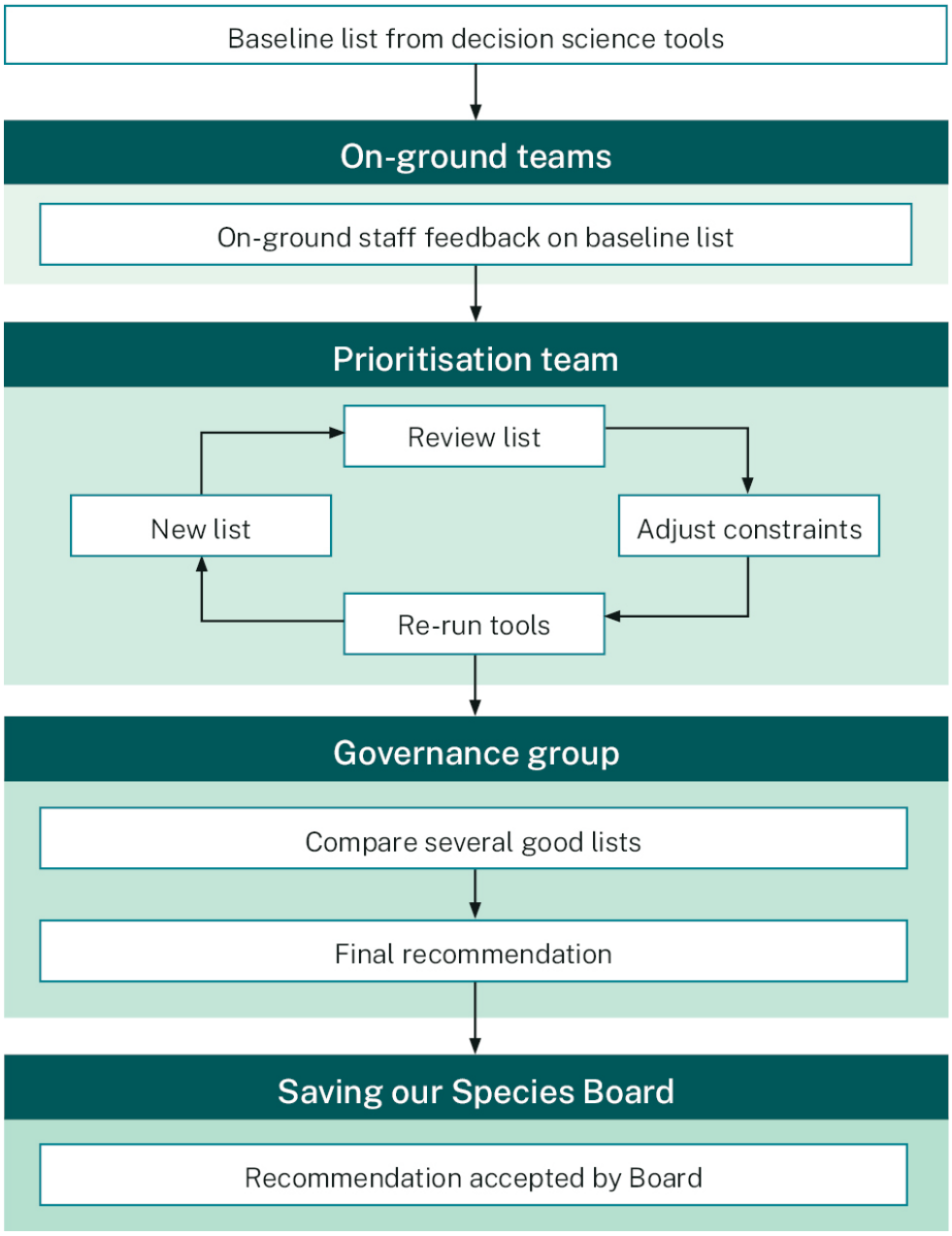


Figure 7 **Consultation supports prioritisation**

Table 3 Saving our Species funding models for project prioritisation

Models for setting priorities	Approach	Decision-making	Management streams
Focus projects: site based	Focus projects are prioritised on a 5-year cycle and cover most on-ground projects. This funding model provides stability through longer term commitments to projects. The aim of focus projects is to secure the species in the wild.	• Decision-science tools are used to prioritise entities • Priority lists are reviewed using expert information on conservation needs	• Site-managed species • Partnership species • Threatened populations of a species
Focus projects: widespread	Focus projects for widespread entities target critical populations, places that offer safe habitat under climate change (refugia), and areas of habitat that support animals to move across the landscape (habitat corridors). As for site-based focus projects, these projects are prioritised on a 5-year cycle.	• Project proposal development with panel evaluation • Sites can be considered for complementarity using decision-support tools	• Landscape species – priority sites • Threatened ecological communities – priority sites
Pilot projects	Pilot projects support a scoping period for entities with complex management needs. This includes widespread entities that require resourcing for baseline surveys, site selection and partnership development. After the first year, successful projects are transitioned to focus projects.	• Project proposal with panel evaluation • Decision-science tools provide supporting information such as climate change resilience	• Landscape species • Threatened ecological communities

Models for setting priorities	Approach	Decision-making	Management streams
Short-term projects	Short-term projects provide flexibility to implement actions that will deliver meaningful ecological outcomes in a short timeframe. Funding is allocated annually for one-year duration. Short-term projects cover research or survey projects to fill critical knowledge gaps (e.g. for data-deficient species), or a once off intensive intervention with a long-lasting benefit. This funding model also provides a short-term investment for species transitioning out of active management after a 5-year investment cycle.	• Project proposal with panel evaluation	• Data-deficient species If not funded as a focus project: • Site-managed species • Landscape species • Threatened ecological communities • Partnership species
Monitoring schedule	Monitoring projects provide an opportunity for periodic monitoring of species not under active management. The aim of this funding model is to provide information on the status of those species to inform the need for future management. This can include: • monitoring for low-risk species (e.g. keep watch species) to support delisting • monitoring for species transitioning out of active management to ensure they remain stable	• Project proposal with panel evaluation • Staged monitoring schedule to fill data gaps	• Keep watch species • Site-managed species • Landscape species • Partnership species

Models for setting priorities	Approach	Decision-making	Management streams
	• monitoring high-risk species where a decline is suspected and urgent intervention may be required.		
Key threatening processes projects	The key threatening processes (KTP) projects fund actions outlined in the KTP strategies and are prioritised according to the KTP framework. High-priority projects include on-ground actions to contain and eradicate threats, and projects to improve statewide management effectiveness. Projects are funded on a 5-year cycle.	• Project proposal with panel evaluation	• Key threatening processes

Evaluation: looking for ways to improve

Setting priorities is neither easy nor straightforward. As a result, Saving our Species is committed to reviewing and evaluating the results of prioritisation processes. This includes evaluation following the introduction of new policies or workflows in line with this framework. After implementing any part of the prioritisation framework, Saving our Species will review the outcomes and look for ways to improve the approach.

In alignment with the 5-year cycle outlined in the 'Project prioritisation cycles' section, Saving our Species will evaluate the process and outcomes of project prioritisation following each 5-year focus project prioritisation cycle.

Program logic and measurement and learning framework

The Saving our Species program logic is used to structure measurement, evaluation and learning (MEL) by the program. The end of program outcomes include securing ongoing support and investment in threatened species conservation. The MEL framework provides measures and performance targets for collating evidence to assess the impact and effectiveness of the program. Project prioritisation is incorporated within the program logic and MEL framework. Prioritisation processes will be evaluated within the MEL framework on a 5-year basis.

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More information

Saving our Species program webpages

- Saving our Species program
- Saving our Species framework
- Nomination – Environment and Heritage webpage for nominating a species, population or ecological community
- Public register of Saving our Species conservation strategies

Legislation

- Biodiversity Conservation Act 2016