Turning the tide on extinctions

Priority actions on invasive species for the next Australian Government

MARCH 2025

invasive species council

Lord Howe Island. Credit: Bruce Wilson.

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About the Invasive Species Council

The Invasive Species Council was formed in 2002 to advocate for stronger laws, policies and programs to keep biodiversity safe from weeds, feral animals, exotic pathogens and other invaders. It is a not-for-profit charitable organisation funded predominantly by donations from supporters and philanthropic organisations.

Acknowledgements

Text: Carol Booth, Policy Director

We acknowledge the First Australians and pay our respects to their Elders past and present. Effective biosecurity in Australia must harness the deep knowledge and land and sea management skills of Indigenous Australians and facilitate their meaningful involvement in decision-making.

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Cover Image: red deer, quokka, cat with echidna, corroboree frog (credit: Ken Griffiths)

Contents

On the side of hope – proposals to catalyse wildlife revivals

A queen ant flies into a shipping container. A pregnant gecko slides into a package. A beetle bores into wooden furniture. Fungal spores waft onto a tourist's boots. A cactus fancier places an online order.

One trivial action – human or non-human, accidental or intended – can end up costing Australia billions. It can wipe out species. Degrade bushland. Make cities less liveable. Destroy crops and livestock. Harm people and pets. Turn diverse ecosystems into depauperate monocultures.

That is why Australia's governments of all stripes have, despite setbacks, maintained the eradication program for red imported fire ants over the past 24 years. It's why the Australian Government has committed >$100 million to prepare for the likely arrival of H5 bird flu. And it's why thousands of trees have been felled in Perth in pursuit of a tiny fungus-farming beetle.

Over the past 200 years, the consequences of biological invasions have been catastrophic for Australia. Measured in species – at least 60 lost, including 6 this century, and at least another 60 likely in the next 10–20 years. Measured in dollars – $24.5 billion a year in measurable costs. Measured in heartbreak? For 2 in every 3 Australians, stopping extinctions is 'very important'.

New invaders continue to establish. Established species continue to spread. The list of species heading to extinction due to invasive species continues to lengthen. Numerous reports warn of growing pressures on Australia's border biosecurity system. Numerous studies, including the latest state of the environment report, document escalating damage. Australia's invasion debt is huge. The extinction crisis is real.

BUT ON THE SIDE OF HOPE: Many dedicated people, inside government and out, are working to reverse these trends. The Australian Government has committed to no new extinctions. Australia has some of the world's best biosecurity experts, invasion biologists, innovators and on-ground practitioners. Passionate land managers and community groups are pouring in an enormous effort to undo the damage. The creation of island and mainland havens has averted extinctions. Transformative technologies are emerging.

A wildlife revival need not be an impossible dream… Australians have shown that with national leadership, scientific expertise and a joint sense of mission, we can overcome major threats to nature.

– Averting Extinctions 2022

The next Australian Government can strategically synergise this existing intellect, energy and effort. With even a modest increase in funding – a proposed $170 million a year over the next 4 years (excluding fire ant measures and other uncosted proposals) (Table 1) – the next government can substantially boost environmental biosecurity to:

1. **more effectively prevent and eliminate new deadly invaders** (section 1)
2. **reduce and reverse priority threats** (section 2)
3. **catalyse solutions-focused research and innovation** (section 3).

Table 1. Environmental biosecurity priorities and opportunities and costs over 4 years

1. Prevent, prepare and eliminate ($50 million + uncosted proposals)
1.1 Strengthen Australia's capacity to prevent new environmental invaders ($10 million/uncosted)
1.2 Ensure that risk creators pay a fair share for environmental invasions
1.3 Fully commit to eliminate red fire ants – Australia's most unwanted
1.4 Build community participation in prevention ($40 million)

2. Mitigate and protect ($505 million)
2.1 Reduce and reverse major threats to nature ($341 million)
2.2 Create island and mainland havens to keep threatened species safe from invaders ($96 million)
2.3 Stave off extinctions and ecosystem collapses in protected areas ($160 million)
2.4 Establish an Indigenous Commissioner for Country ($8 million)

3. Investigate and innovate ($124 million)
3.1 Invest in environmental biosecurity research and innovation

H5 bird flu is likely to arrive during the next term of government. Among the millions of birds killed overseas were about 40% of Peru's pelicans. Credit: Guadalupe Pardo.

1. Prevent, prepare and eliminate

– to stop deadly new environmental invaders

Independent reviewers, governments, industries and community groups all agree – Australia needs a more sustainable funding model to stem the flow of new invaders and eliminate the deadliest. That need is particularly acute for environmental invaders. One that we can't afford to let stay is the red imported fire ant. A proposed investment of $50 million over 4 years would lift the combined capacity of governments, Traditional Owners, NRM groups, environmental industries and community groups to prevent and prepare for new environmental invaders

Asian hornet. Credit: Philippe Garcelon.

1.1 Boost Australia's capacity to prevent deadly new environmental invaders

Current situation

Some 5,000 new species are known to have established in the wild since 1788; many others are unknown. Although biosecurity has become much more sophisticated, the flow of new harmful species into Australia remains alarmingly high (Table 2). Myrtle rust, found in 2010, has already sent 16 Australian plant species to the brink. **With the burden of existing invaders already exceeding what is manageable or affordable, the next Australian Government should prioritise efforts to staunch the flow of new environmental invaders.**

The federal commitment to environmental biosecurity has been growing. A 2017 review of Australia's biosecurity system led to the establishment of the role of Chief Environmental Biosecurity Officer (CEBO) – **in recognition of the 'increasing expectation that environmental biosecurity should be on an equal footing' with agricultural biosecurity.** Progress has been made, including a recent focus on preparing for the arrival of H5 bird flu. But environmental biosecurity still has far to go to achieve 'equal footing', let alone a substantial drop in the arrival of new invaders.

In a backward step in 2023, the CEBO role was downgraded, and the Environmental Biosecurity Office was incorporated into the office for plant biosecurity. **Progress on core functions has been impeded by too few staff.** Many elements of the CEBO plan to strengthen environmental prevention (draft since 2020) have not been implemented. **The Environmental Biosecurity Project Fund has languished at just $0.8 million a year** – a small fraction of the funding for industry-focused projects.

Opportunities

To better enable the Environmental Biosecurity Office to fulfill its core functions, **the CEBO role should be upgraded and the office made a stand-alone unit with at least 25 staff FTE**.

To slow the arrival of environmental invaders into Australia, we propose **a target of pathway action plans and response plans for at least 30 new species/species groups by 2027**.

A modest **investment in the Environmental Biosecurity Project Fund** – an initial tripling to $2.5 million – would enable more ambitious, multi-year projects.

Myrtle rust, a recent arrival in Australia, has already pushed many species in the family Myrtaceae close to extinction. Credit: Tim Low

Priority actions

1.1.1 **Strengthen the capacity of the Environmental Biosecurity Office** by:

- appointing the Chief Environmental Biosecurity Officer at the equivalent seniority of the Chief Plant Protection Officer and Chief Veterinary Officer (First Assistant Secretary)
- establishing the Environmental Biosecurity Office (EBO) as a separate unit reporting to the CEBO and including funding for the EBO as a separate line item in the federal budget
- ensuring at least 25 permanent FTEs report to the CEBO and are fully focussed on environmental biosecurity functions (not serving other departmental priorities).

1.1.2 Complete by 2027 **pathway action plans and incursion response plans** for at least 30 species/species groups assessed as high environmental risk.

1.1.3 **Increase funding for the Environmental Biosecurity Project Fund** (initially to 2.5 million/year) to enable more ambitious multi-year projects to better protect the environment from new invasive species.

Table 2. A stream of new invaders – some established species detected in the environment since 2010 that are likely to cause harm (or are already doing so)*

2010	Myrtle rust, ostreid herpesvirus-1, *Terpios hoshinota*, white colonial sea squirt, giant willow aphid, tropical soda apple
2011	Smooth newt, granulate ambrosia beetle, avian paramyxovirus 1, *Cecropia peltata*
2012	Spotted house gecko, pungent slippery jack
2013	*Nannizziopsis barbatae*
2014	Jaguar cichlid, *Daphnia galeata*, *Enterococcus lacertideformus*, Argentine rice-grass
2015	Bellinger River virus (uncertain origin), avian paramyxovirus 5, browsing ant
2016	White spot syndrome virus, *Streptococcus iniae*
2017	*Edwardsiella ictalurid, Ciona savignyi*, North American false truffle
2018	Soft-shelled clam
2019	Black scar oyster, psittacid herpesvirus-1, plume poppy
2020	Asian shore crab, African black sugar ant, *Ehrlichia canis*, *Pachymeniopsis lanceolata*
2021	Polyphagous shot-hole borer and its *Fusarium* fungus, carpet sea squirt
2022	Nile tilapia
2023	Suminoe oyster, papaya mealybug
2024	Freshwater gold clam, varroa mite

* Many species are detected only years after establishing, which means some established species have not yet been detected. The impacts of most are uncertain so their potential to cause harm is largely based on their impacts elsewhere.

1.2 Ensure that risk creators pay a fair share for environmental invasions

Current situation

The 2017 review of the national biosecurity system found that '**Funding for environmental biosecurity needs a broader base to be more sustainable** and less prone to short-term government budget decisions'. The current level of funding, even with recent welcome increases, is **not enough to achieve the level of environmental protection expected by Australians** and to keep pace with growing risks such as new emerging diseases.

A fair and equitable system would require risk creators – mainly importers – to substantially cover the cost of incursion responses as well as border prevention activities. Otherwise, the burden of funding for incursion responses is unfairly borne by taxpayers and domestic industries.

Opportunities

As recommended in the 2017 review of the biosecurity system, as a high priority, the next Australian Government should substantially **increase funding for environmental biosecurity.** This should be based on a transparent analysis of funding gaps and the level of funding needed to achieve Australia's national and international environmental targets.

It is vital for the next government to continue the work to develop a sustainable funding model for biosecurity, in collaboration with community and industry stakeholders – to initially achieve at least the level of funding recommended by the 2017 review.

As part of this, we propose that the next Australian Government proceeds with **a trial of risk insurance focused on biofouling**, as a preliminary step in adopting more incentive-based funding models. Requiring importers to take out risk insurance to cover the costs of responding to new incursions would incentivise compliance and reduce risky behaviours. It is consistent with the intention of successive governments to ensure that risk creators pay their fair share of biosecurity costs.

Priority actions

1.2.1 Continue to investigate and implement options to generate sustainable funding for biosecurity. As a high priority, **investigate revenue-raising options for environmental biosecurity**, across the invasion curve, from prevention to threat abatement. Based on a comprehensive gaps analysis, **allocate the funding needed to achieve Australia's national and international environmental targets.**

1.2.2 Develop and **trial a risk insurance scheme for biofouling** to build on modelling work by the Centre of Excellence in Biosecurity Risk Analysis.

1.3 Fully commit to eliminate red fire ants – Australia's most unwanted

Current situation

The red fire ant is one of life's best chemists, producing a complex, potent venom of dozens of alkaloids and proteins. It also fields some of the world's most feared fighting forces,which swarm in their thousands and sting in unison to defend their nest and capture prey. Wildlife, pets, livestock and humans are all vulnerable. The ruin of many future picnics will be among the least of their impacts. Australia will become a more dangerous place if fire ants stay.

The task of eliminating fire ants has been underestimated since they were detected in 2001. Although eradication efforts have eliminated most populations and slowed their spread – thus preventing billions of dollars of economic, environmental and health impacts – complete eradication has remained elusive due to inadequate funding.

In 2023 a new fire ant eradication response plan was agreed to, with $593 million committed until 2027. While this is a significant positive step, it is not enough to achieve eradication. The 2021 independent review recommended up to $300 million per year – double the current funding level.

Opportunities

For the sake of all Australians, the **next Australian Government should fully seize the opportunity to eliminate red fire ants over the next decade**, before it becomes impossible. This will save billions of dollars every year, prevent species decline and loss, and avoid suffering and deaths from attacks.

With the knowledge gained over the past 20 years, eradication can be achieved. All 14 independent reviews of the program since 2001 have found that it remains technically feasible and has a highly favourable benefit-to-cost ratio.

Long-term funding, proactive suppression and stronger containment are crucial to achieving this. A 2024 senate inquiry on fire ants made 10 recommendations that will afford Australia the best opportunity to achieve eradication. We recommend these be fully implemented, including **a review of the current funding levels and investigation of 'alternate models for delivery'**. An independent fire ant authority would be the most effective model for transparency, accountability, public engagement and agility.

Priority actions

1.3.1 **Accept the recommendations of the 2024 senate inquiry,** including to rapidly review the adequacy of funding.

1.3.2 **Urgently increase resources for the Fire Ant Suppression Taskforce** to support self-treatment by residents in all affected local government areas.

1.3.3 **Commence development of a funding package for fire ant eradication beyond 2027**.

1.3.4 **Establish a stand-alone fire ant response authority** to run the eradication program.

1.3.5 **Scale up public engagement** to strengthen public support for fire ant treatments.

1.4 Build community participation in prevention

Current situation

A partnership model of biosecurity with industries has been embraced but **government partnerships with the community sector are scarce**. While engagement has improved, largely due to the establishment of the Environmental Biosecurity Office, the potential for the more meaningful involvement of community groups across the biosecurity spectrum has barely been explored.

One major gap is the lack of a national forum to cultivate partnerships between participants in the environmental biosecurity system, including the state and territory governments. For industry, Plant Health Australia and Animal Health Australia are important bodies for fostering industry-government collaborations. Substantial public funding is directed to these bodies for functions also needed for effective environmental biosecurity, for which funding is scarce.

Opportunities

The value of independent partnership bodies has been well recognised and funded for industry but not yet for environmental biosecurity. We propose the establishment of an **independent partnership body for environmental biosecurity** involving the federal, state and territory governments, First Australians, environmental NGOs, NRM organisations, relevant research bodies and the environmental industry sector (e.g. nature tourism, environmental rehabilitation).

The proposed body would **boost community participation in prevention, surveillance and management** by:

- fostering collaborations between participants in environmental biosecurity
- motivating strong community commitment to and involvement in biosecurity
- undertaking biosecurity tasks best performed in partnerships or outside government
- reporting on progress to implement environmental biosecurity programs and meet targets.

Effective biosecurity relies fundamentally on community engagement. Eradication of the tree-destroying polyphagous shot-hole borer can only be achieved if members of the public notice and report trees hosting these beetles. Credit: DPIRD, WA Government

Priority action

1.4.1 **Establish an independent partnership body** (with seed funding of $10 million/year) to foster collaborations – between governments (federal, state and territory), environmental NGOs, NRM bodies, First Australians, researchers and environmental industries – and drive stronger community involvement in biosecurity.

2. Mitigate and protect

– to stop extinctions and reverse threats to nature

A proposed investment of $500 million over 4 years will enable the Australian Government to synergise the work of community groups, land managers and other governments to avert extinctions, reverse threats, and catalyse wildlife revivals. There are opportunities galore to make a lasting difference – by permanently removing invaders from some places, transforming islands into wildlife havens, reducing the threat of feral cats and developing a harmonised national system for the sale of safe garden plants.

Numbat. Credit: Bruce Thomson.

2.1 Reduce and reverse major threats to nature

Current situation

Australia has a plethora of highly invasive species that kill, parasitise, poison, trample, choke and outcompete Australian species. At least 230 (not counting many weeds) are known threats to native species on our national threatened list.

For more than 30 years, Australia has had a statutory system for listing and abating major threats – a system essential for threats like invasive species that need long-term coordinated management and research. **Due to scarce funding and poor implementation, the threat abatement system has mostly failed to live up to its potential.**

But recently there has been an encouraging focus on implementation. The 2024 threat abatement plan for feral cats was the first to be jointly made by all jurisdictions (except Queensland). The proposed threat abatement plan for escaped garden plants and aquatic weeds will be another. Also driving more effective implementation across Australia has been the appointment of national coordinators for action plans on feral deer and pigs.

Program opportunities

With >2,000 species and ecological communities listed as nationally threatened, it is not feasible to save them all, species-by-species, community-by-community, while their major threats remain potent. Dedicated funds with clear purposes, as opposed to short-term grant rounds within broad programs, are essential for long-term planning, implementation and success to reduce major threats.

A proposed **Nature Resilience and Threat Abatement Fund** would provide guaranteed baseline funding for implementation of threat abatement or action plans for 12 big threats to nature, including several invasive species and adverse fire regimes. Additional funding will often be needed for full implementation (e.g. see 2.2.2 for funding needed for implementing the feral cat plan).

An expanded network of **7 additional national invasive species action coordinators** ($400,000 annually per coordinator) would build on a highly effective collaborative approach that leverages many times more the program costs in contributions by state and territory governments, landowners and NGOs. Priorities for coordination are (1) invasive grasses in northern Australia, (2) community surveillance, (3) invasive insects, (4) freshwater invasive species, (5) invasive cacti, (6) escaped garden plants, (7) myrtle rust and other exotic plant diseases.

The proposed **Averting Imminent Extinctions Fund** would enable rapid responses to stop imminent extinctions and initial short-term action on new catastrophic threats (where this cannot be funded under other arrangements). Unspent funds would accumulate, reflecting the sporadic nature of these threats. Major multi-species threats like H5 bird flu need dedicated funding.

Priority actions

2.1.1 Establish the **Nature Resilience and Threat Abatement Fund** ($24 million/year) to provide $2 million a year base funding to support effective national collaboration on 12 priority threats, including invasive grasses, feral cats, foxes, feral deer, feral goats and escaped garden plants. This includes coordinator positions for each of the 12 identified threats to drive action, awareness and national cross sectoral coordination ($400,000 each/year).

2.1.2 Create **7 new national invasive species action coordinator positions** ($8.4 million/3 years) to complement the existing feral deer, feral pig and feral cat/fox positions, which should be maintained.

2.1.3 Establish an **Averting Imminent Extinctions Fund** ($3 million/year) to enable rapid action to prevent potential imminent extinctions or enable an initial response to a potentially catastrophic new threat.

Project opportunities

Here are some impactful threat abatement projects that should be high priorities for the next Australian Government. Some need dedicated funding and others can be funded from existing or proposed new funding sources.

Threat abatement and action plans

National threat abatement plan for escaped garden plants and aquatic weeds – planning and initial action: Australia's governments have agreed to jointly develop a plan to tackle Australia's most demanding and expensive land management problem and a major escalating threat in almost every ecosystem. This represents a major opportunity for the nursery industry, governments, conservationists, Traditional Owners, farmers and other landowners to develop a harmonised national approach to prevent the sale of harmful species, eliminate emerging invaders and reduce the threat of entrenched invaders.

National Feral Cat Threat Abatement Plan – implementation: Feral cats have been Australia's primary extinction driver, a major cause of >30 extinctions, and a threat to hundreds more species. They kill an estimated 2 billion native mammals, birds, reptiles and frogs every year. All Australia's governments (except Queensland) agreed in 2024 to jointly implement this plan.

National Feral Deer Action Plan – implementation: Feral deer are one of Australia's worst emerging environmental threats and a problem for many farmers. Implementation of the action plan will prevent the spread of feral deer, allow targeted eradication and reduce the impacts on the environment, agriculture and communities.

Priority eradication and control programs (not including island programs)

South Australian feral deer eradication: This would be a co-investment in South Australia's nation-leading 11-year deer eradication program, which has already made significant gains based on a realistic plan. A failure to seize this short-lived opportunity will mean taxpayers and landowners perpetually on the hook for ever-growing management costs.

Blue Mountains World Heritage deer eradication (NSW): Feral deer are currently in low numbers in the Blue Mountains, offering the opportunity to prevent their spread across the entire world heritage area.

Tasmania Wilderness World Heritage Area deer eradication: Building on the success of the Walls of Jerusalem aerial control program, deer should be eradicated from the neighbouring Central Plateau Conservation Area. This will prevent reinvasion of the Wilderness World Heritage Area and protect endangered cider gums.

Wet Tropics yellow crazy ants eradication phase 2 (Qld): This highly successful program, co-funded with the Queensland Government, remains on track, on budget and on target to achieve eradication during phase 2. Eliminating yellow crazy ants from Australia's most biodiverse region is essential for protecting unique Wet Tropics frog, bird and lizard species vulnerable to acid attack, as well as people and domestic animals.

Whitsundays yellow crazy ants eradication (Qld): Eradication of a small early-stage invasion of yellow crazy ants would protect shorebird colonies and mangrove ecosystems and remove a source population for future invasions.

Gamba grass control in Litchfield National Park (NT): With more than a fifth of Litchfild invaded by gamba grass, the park faces ecosystem collapse unless there is urgent intervention. This proposed co-investment with the Northern Territory Government is needed to prevent its destruction by gamba-fuelled infernos and protect an important tourism destination.

Central Australian buffel grass plan (SA, NT, WA, Qld): Fuelling hot destructive fires, outcompeting native plants and degrading wildlife habitats, buffel grass is transforming some central Australian ecosystems. A plan is needed to mitigate its catastrophic threat to the environment, First Nations cultures and the safety of remote communities.

North Queensland gamba grass eradication plan: Gamba grass is a key threatening process and weed of national significance that fuels intense fires, threatens wildlife, human safety and infrastructure, and increases carbon emissions. The proposed plan would provide the foundation for eradication and assess the costs, building on the eradication program in the Kimberley (WA) and containment in the Northern Territory.

Feral animal control in the Australian Alps (NSW/Vic/ACT): This proposed program would build on the success of recent aerial culling of feral horse, deer and pigs, by expanding the removal of hard-hooved feral herbivores, protecting threatened species and restoring alpine streams and peat bogs in this national heritage landscape.

Priority actions

2.1.4 **Fully implement the national threat abatement plan for feral cats** to reduce the threats of Australia's worst extinction driver ($60 million/4 years).

2.1.5 Optimise the potential for achieving a nationally harmonised approach to weed prevention and management through the development of a jointly prepared **national threat abatement plan for escaped garden plants and aquatic plants** ($4.8 million/3 years).

2.1.6 Reverse the threat of feral deer by **implementing the national deer action plan** ($28 million/4 years) and investing in the **eradication of deer from:**

- **South Australia** (a co-investment of $2 million/4 years)
- **Blue Mountains World Heritage Area** ($5.6 million/3 years)
- **Tasmanian Central Plateau Conservation Area** ($1.95 million/4 years).

2.1.7 **Bring to completion the eradication of yellow crazy ants from the Wet Tropics** by co-investing with the Queensland Government in phase 2 of this highly successful program ($30 million/10 years, from 2026). Seize the opportunity to **eliminate yellow crazy ants from the Whitsundays** ($0.9 million/4 years)**.**

2.1.8 Invest in **eradication and management of highly invasive flammable grasse**s to protect nature, people and infrastructure:

- co-invest with the Northern Territory Government to prevent the collapse of Litchfield National Park from gamba grass invasion ($5.2 million/5 years)
- support the development of a plan to eradicate gamba grass from north Queensland ($200,000)
- support the development of a plan to manage buffel grass in central Australia ($200,000).

2.1.9 Support the **recovery of the Australian Alps national heritage area** from invasive hard-hooved animals by investing in additional removals and recovery of threatened species, alpine streams and peat bogs ($4 million/4 years).

Volunteers from Gamba Grass Roots at work. Credit: Pew Charitable Trusts

2.2 Create island and mainland havens to keep threatened species safe from invaders

Current situation

Australia's islands have been centres of extinction – accounting for almost a third of known species losses despite making up <0.5% of Australia's land area (not counting Tasmania). They also harbour a disproportionate number of threatened species, including some of Australia's rarest. Most island losses have been due to invasive species.

But islands also offer excellent opportunities to safeguard threatened species because of the potential to eradicate invasive species – to protect local populations and highly threatened species from the mainland. About 100 Australian islands are now havens for 38 threatened mammal taxa susceptible to predation by cats and foxes, including several now extinct on the mainland.

Over the past 30 years, Australia's island sanctuaries have been supplemented by at least 30 fenced havens on the mainland – areas surrounded by high fences from which invasive predators have been eradicated.

Program opportunities

Australia should build on what has arguably been the most effective conservation interventions for threatened animals in recent times – the eradication of invasive species from islands and fenced mainland reserves. Recent successes, among the largest eradications in the world, on Macquarie Island, Western Australia's Dirk Hartog Island and Lord Howe Island, all world heritage sites, show what can be achieved.

A National Islands Eradication and Recovery Fund would yield enormous benefits for endemic island wildlife, island-breeding seabirds and mainland species at risk due to invasive species. With the looming threat of H5 bird flu, island eradications are a practical way to strengthen the resilience of susceptible seabird species. Examples of eradications that could be supported include weeds on Lord Howe Island (NSW), rabbits and cats on Kangaroo Island (SA), deer on Bruny Island (Tas), rodents on Norfolk Island, and foxes, cats and cane toads on North Stradbroke Island (Qld).

A National Wildlife Havens Fund would enable the expansion of Australia's network of mainland havens to protect a wider range of native wildlife that cannot coexist with certain invasive species. As well as fenced reserves to exclude cats and foxes, Australia needs trout-free havens for native galaxiids, sites free of chytrid fungus for frogs, enclosures to protect delicate plants and animals from trampling by hard hooves, and toad-free havens (created by excluding cane toads from water).

Priority actions

2.2.1 Establish a **National Islands Eradication and Recovery Fund** ($16 million/year) to provide the long-term funding needed to secure community support for eradications and complete the full cycle of planning, eradication, verification and prevention of re-invasion. Develop a national island eradication plan to inform investment priorities.

2.2.2 Establish a **National Wildlife Havens Fund** ($8 million/year) to expand the networks of mainland havens, with a strong focus on plants and animals at risk of imminent extinction. Develop a national wildlife havens plan to inform investment priorities.

Project opportunities

Here are some island eradication and haven projects that should be high priorities for the next Australian Government.

Trout-free havens for threatened galaxiids (NSW, Vic): With at least 20 galaxiid species highly threatened by predatory trout, a network of havens – created by safeguarding, strengthening and building barriers to prevent trout access – will be one of the most effective ways to prevent near-term extinctions.

Lord Howe Island weeds eradication (NSW): The highly effective program on Lord Howe Island to eradicate 25 priority weeds will enable ongoing restoration of the island's world heritage values. The program has already achieved several eradications and an 80% reduction of the impacts of targeted weeds.

Lungtalanana island cat eradication project (Tas): Eradication of feral cats will enable the Tasmanian Aboriginal Community to achieve their healthy country vision for Lungtalanana (Clarke Island) to reintroduce locally extinct and culturally important wildlife.

Kangaroo Island cat eradication (SA): The Kangaroo Island Landscape Board is committed to removing feral cats from the whole of Kangaroo Island and this funding would turbo charge their efforts to protect threatened dunnarts, echidnas and bandicoots. This funding would enable completion of cat eradication on the eastern part of the island, and development of a 10-year plan to extend that success and make Kangaroo Island a cat-free wildlife haven.

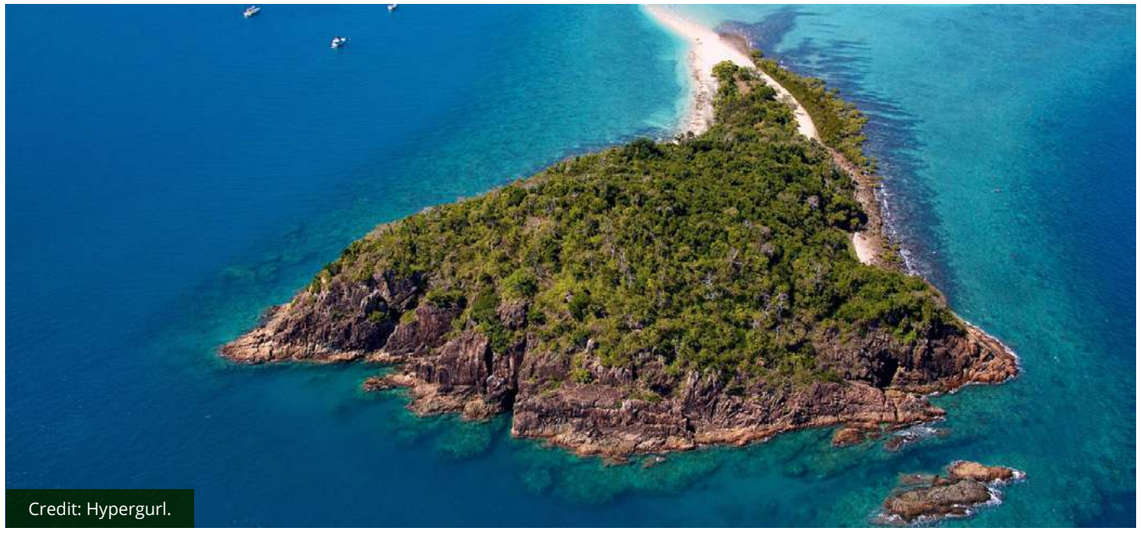
Priority actions

2.2.3 Establish a **network of havens to protect highly threatened native fish** from invasive trout ($2 million/4 years).

2.2.4 Invest in **weed eradication on Lord Howe Island** to enable restoration of the island's world heritage values ($3 million/4 years).

2.2.5 Support the **eradication of feral cats from Lungtalanana** (Clarke Island) to enable the reintroduction of locally extinct and culturally important native animals ($1.7 million/4 years).

2.2.6 Support the **eradication of feral cats from the eastern part of Kangaroo Island** ($6.25 million) and **develop a 10-year plan** ($0.45 million) to achieve full eradication.



Credit: Hypergurl.

2.3 Stave off extinctions and ecosystem collapses in protected areas

Current situation

Protected areas are often referred to as the 'crown jewels' of nature conservation. While effective at stopping land clearing, mining, damming and other destructive activities within their boundaries, a protected area designation is no barrier to invasive species. **Many of Australia's premier protected areas, including world heritage areas, are suffering devastating declines due to invasions** or are at imminent risk of this; for example:

- Six animal extinctions since 2000 have been of species with most of their habitat in national parks.
- In some premier national parks around the nation – world-heritage-listed Kakadu (NT) and Purnululu (WA), as well as Booderee (NSW) and Great Otway (Vic) – populations of several mammal species have collapsed.
- Invasions of highly flammable grasses are threatening the future of several parks – buffel grass in world-heritage-listed Uluru-Kata Tjuta and Tjoritja/West MacDonnell Ranges and gamba grass in Litchfield.

Opportunities

The precipitous decline in values of some of Australia's most valuable protected areas, including world heritage areas, warrants investment by the Australian Government to avert permanent losses and ecosystem collapses.

A **Protected Areas Invasives Action Fund** would strengthen the capacity of state and territory governments to avert or manage catastrophic threats to Australia's most precious natural areas, including world heritage areas, national heritage areas, Ramsar wetlands and private protected areas. It should not be used for the routine management of invasive species.

Priority actions

2.3.1 Undertake an **analysis of priority invasive species threats to Australia's protected areas.**

2.3.2 Establish a **Protected Areas Invasives Action Fund** ($40 million/year) to support the management of invasive species threats in public and private protected areas where there is a risk of ecosystem collapse or major biodiversity loss.

2.4 Establish a federal Indigenous Commissioner for Country

Current situation

First Australians have lost much and suffered greatly due to the impacts of invasive species – the loss of totemic species, cultural sites, bush tucker and medicine, and the degradation of Country.

As the recognised custodians of much of Australia's land and sea, they also have the enormous responsibility of managing invasive species across vast areas. Much is at stake, for almost 60% of Australia's threatened species occur on land managed by Indigenous Australians. Despite this, they have only a limited say over the laws, policies and programs that affect their lands and seas and ability to manage invasive threats.

Opportunities

The establishment of an independent Commissioner for Country would boost First Australians' capacity to protect and restore natural and Indigenous cultural heritage values across vast swathes of the country. Supported by an office (with a recommended 11 FTE staff) and advisory body, **the Commissioner would be a public champion and authoritative First Nation's voice for repairing Country** – not to replace or supersede the voices of Aboriginal and Torres Strait Islander communities but to empower and elevate those seeking to care for Country.

This proposal is supported by the Indigenous Desert Alliance, Northern Australian Indigenous Land and Sea Management Alliance, and Indigenous representatives of the Invasive Species Council, Biodiversity Council, WWF Australia and Australian Conservation Foundation.

Together, we must create a culture where Australians unite around a living country that allows for our native species to thrive, and reclaim our shared role as custodians of this land. Central to this is improved invasive species management.

– Richard Swain, Wiradjuri man and Indigenous ambassador for the Invasive Species Council

Priority action

2.4.1 Establish an Indigenous Commissioner for Country to foster First Nations leadership, provide independent advice, and be a champion for repairing Country, including by invasive species management ($2.1 million/year).

3. Investigate and innovate

– to solve difficult problems

Australia has a history of innovation in biosecurity and solving seemingly intractable problems. With world-leading scientists, and technological and ecological breakthroughs on the horizon, the proposed investment of $124 million over 4 years will support a concerted effort to solve some of Australia's most difficult environmental problems.

Credit: Getty Images.

3.1 Invest in environmental biosecurity research and innovation

Current situation

History shows that Australia can overcome big problems through research and innovation – epitomised by the moth that beat back prickly pear and the viruses that keep rabbits from eating the land bare. Investment in research is one of the most cost-effective and powerful interventions governments can make to achieve more effective prevention and control of invasive species at scale. Australia is fortunate to have world-leading researchers in biosecurity and invasion biology.

Yet Australia's first 5-year research plan in environmental biosecurity expired in 2019 without having been implemented. And the current 5-year plan – the *National Environment and Community Biosecurity Research, Development and Extension Strategy 2021–26* – seems likely to also suffer the same fate.

Program opportunities

Long-term research is needed to solve Australia's biggest invasion problems. This requires dedicated research funds – as has been the case for industry-focused research.

Environmental Biosecurity Research & Development Fund: A dedicated fund is needed to drive the research to develop innovative solutions to some of Australia's most difficult environmental problems. Innovation should be fostered by long-term grants for promising ideas. A proportion of research funding – we suggest at least 20% – should be dedicated to cracking the biggest challenges of environmental biosecurity, including the offer of rewards for solutions to specified problems.

Threat Abatement Solutions Fund: The only way to reverse Australia's escalating extinction trends is to invest much more in developing effective methods to control Australia's worst invasive species. In particular, Australia needs technological and ecological leaps to develop target-specific, humane and affordable methods for the control of vertebrates that are deployable at scale. This fund should be focused on the research priorities identified in threat abatement plans, including through a boost to the National Environmental Science Program, for which funding expires in 2027.

Here, a Felixer trap is being installed for cat management. It is an innovative, target-specific control technology recently developed in Australia, aided by funding from the Australian Government.

Priority actions

3.1.1 Establish a dedicated **Environmental Biosecurity Research & Development Fund** ($84 million/4 years) to address priority environmental biosecurity issues with a strong focus on prevention. Appoint a coordinator and host body to drive development and implementation of a research plan

3.1.2 Commit to maintaining **the National Environmental Science Program** (NESP) beyond 2027, with a strong focus on developing solutions, both technological and ecological, to abate invasive species threats.

3.1.3 Establish a **Threat Abatement Solutions Fund** ($10 million/year) to fund priority research needed to effectively foster the development of solutions Develop and maintain a national list of research priorities for abating key threatening processes. Foster solutions-focused research by funding NESP projects and offering incentives to pursue innovative new ideas.

Project opportunities

Here are some research projects that should be high priorities for funding, subject to transparent prioritisation processes. Not all are costed here.

Research to develop new feral camel control technology: Funding is needed to advance research into new baiting technologies for camel control, building on South Australia's leading research into new hopper technology for feral deer and feral goat control. This is expected to enable large-scale and much less expensive effective camel control.

Risk and pathways analysis for invasive fungi: Myrtle rust, first detected in Australia in 2010, has already driven several unique Australian plants to the edge of extinction. Knowledge is largely lacking of the risks of the many other fungal pathogens not yet in Australia that could also cause devastating plant and animal diseases. This group of potential invaders should be a very high priority for risk and pathway analysis to support more effective prevention.

Valuing the biosecurity system for nature conservation: The benefits of Australia's biosecurity system have been valued at >$250 billion a year but this does not include its great value for conserving biodiversity and environmental health (other than the ecosystem services that benefit humans). A credible method to value environmental costs and benefits and benchmark them against other value types is essential for determining biosecurity priorities. We recommend commissioning the Centre of Excellence for Biosecurity Risk Analysis to develop a method and assess the value of the biosecurity system for nature conservation.

Assess and prioritise invasive species threats: To inform future investment in threat abatement, the next Australian Government should commission a systematic assessment and prioritisation of the invasive species threats encompassed by the novel biota key threatening process, including emerging threats.

Priority actions

3.1.4 Fund research to develop a **method for baiting feral camels** based on hoppers developed by the South Australian Government ($500,000/3 years).

3.1.5 Fund an **investigation of the risks of fungal pathogens not yet in Australia** and the pathways by which they could arrive in Australia ($240,000).

3.1.6 Commission research to **develop a method to properly value and benchmark the value of biosecurity for the natural environment**.

3.1.7 Undertake a **systematic assessment and prioritisation of invasive species threats to the Australian environment** encompassed by the 'novel biota' key threatening process.