



WWF

AUSTRALIA



**BUILDING NATURE'S
SAFETY NET 2020:
THE PROMISE OF 2030.**

ACKNOWLEDGEMENTS

Report author: Martin Taylor. See full acknowledgements page 51. WWF-Australia acknowledges the Traditional Owners of the land on which we work and WWF-Australia acknowledges the traditional custodians of the land on which we work throughout Australia. We acknowledge their continuing connection to their lands, waters, and culture. We pay our respects to Elders – past and present, and their emerging leaders.

WWF-Australia has been working to create a world where people live in harmony with nature since 1978. WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

WWF-Australia, Level 1, 1-3 Smail Street, Ultimo, NSW, 2007.

WWF® and World Wide Fund for Nature® trademarks and ©1986 Panda Symbol are owned by WWF-World Wide Fund For Nature (formerly World Wildlife Fund). All rights reserved.

For contact details and further information, please visit our website at www.wwf.org.au

Cover photography: A brush-tailed phascogale © Albert Wright / Alamy Stock Photo. This page: Dolphins in Jervis Bay © Adobe / Benjamin



CONTENTS

Executive summary	3
Recommendations	6
Protected areas save wildlife	7
Protected areas are economically valuable	8
Effective, permanent protection vital	9
Challenges of a warming climate	10
Promise of 2020	11
Progress to 2020 promise	12
Progress stalls, national parks go backwards	13
“Ecologically representative”	14
Terrestrial ecosystem protection	15
Marine ecosystem protection	21
Protection of species and ecosystems of national significance	22
Protection of “inland waters”	25
“Equitable”: Indigenous protection of nature	27
“Well-connected” and “integrated into the wider landscape and seascape”	29
Box 1. Critical habitats: priorities for protection	30
The promise of 2030: Convention on Biological Diversity draft 2030 targets	33
Box 2: Objectives and Progress Measures in Australia’s Strategy for Nature, advanced by investing in the National Reserve System	34
Australia’s Strategy for Nature 2019-30	35
Under-investment in Australia’s protected area growth	35
Box 3. Saving night parrot habitat	36
Major new investment needed to meet the promise of 2030	37
Funding sources already available	38
Design and principles	38
Ecosystem services return on investment	38
Protected areas a key part of post-disaster economic recovery	40
Conclusion	40
Acknowledgements	41
Methods	41

EXECUTIVE SUMMARY

In the wake of the catastrophic bushfires of 2019-20 and the economic havoc caused by the COVID-19 pandemic, strategic growth of protected areas - public, private or Indigenous - has a vital role to play in advancing biodiversity conservation but also national economic recovery.



AICHI TARGET 11: AUSTRALIA HAS FALLEN SHORT OF MEETING ITS PROMISE TO THE INTERNATIONAL COMMUNITY TO PROTECT 10% OF EACH BIOREGION BY 2020.

It will help to revive the damaged tourism industry, while delivering new jobs and opportunities in natural resource management, particularly for Indigenous land managers.

The total protected area system on land covers nearly 20% of Australia's landmass, thanks largely to expansion of Indigenous Protected Areas over the past decade.

However, Australia has fallen short of meeting its promise to the international community to protect 10% of each bioregion by 2020 (Convention on Biological Diversity Aichi Target 11). Nearly one-third (27) of 88 terrestrial bioregions¹ are still below the minimum of 10% protected, mostly in the state of Queensland.

Of 6,001 terrestrial ecosystems, only 2,218 (37%) have reached minimum standards of protection, while 1,542 still have no protection at all (26%).

Only 13 (15%) of 84 threatened ecological communities (TECs) have reached minimum standards of protection, along with 833 (43%) of 1,937 species of national significance (SNES) listed under the *Environment Protection and Biodiversity Conservation Act*. Two TECs and 129 SNES have no protection of their known or likely-to-occur habitat (as mapped by the Australian Government).

Despite the massive expansion of marine parks to all Commonwealth waters in 2012, six of 43 marine bioregions are still below 10% protected, mostly in south-eastern waters. Only 499 (54%) of 920 marine ecosystems have reached minimum standards of protection, and 115 have none.

¹ Excluding the Coral Sea islands.



DR MARTIN TAYLOR
PROTECTED AREAS & CONSERVATION
SCIENCE MANAGER
WWF-AUSTRALIA



Spotted quoll © Craig - stock.adobe.com

EXECUTIVE SUMMARY

Most progress in protecting ecosystems and species happened in the first half of the 2010-20 decade. Progress has since stalled and actually gone backwards for some ecosystems.



Black kites at Undara Volcanic National Park, Queensland. © Martin Taylor

Stream, lake and wetland (inland waters) protection reached the minimum 10% protection in 147 (77%) of 191 catchments nationwide in 2016, up from 139 in 2010. However, this went backwards to 145 catchments in 2020 due to the revocation of two large nature refuges in Cape York, Queensland.

The high level of protection afforded by national parks, where commercial extraction of natural resources is generally prohibited, was also downgraded on land and sea. The largest protected area downgrade in history occurred in 2018, when commercial fishing was allowed once more in vast areas of ocean formerly protected as marine national parks in 2012.

An ongoing concern with protected areas in Australia is the growing dominance of multiple-use areas in IUCN categories III-VI, where commercial-scale natural resource harvest or extraction (like trawling) may be permissible. This is at odds with IUCN guidelines requiring that such uses be “low-level non-industrial” and “compatible with nature conservation”. A growing body of research shows such areas are often no better at protecting biodiversity than unprotected areas. There is no program or institution for auditing or assessing such protected areas for conformity with the IUCN protected area definition and guidelines. In most cases, there is little public transparency about which commercial extractive interests, if any, are allowed in protected areas, their levels and impacts.

Australia has not had a dedicated national program of grants for land purchase or

incentives for private land covenants since the National Reserve System Program was terminated in 2012-13. Only the Indigenous Protected Areas Program has continued on a very small scale.

The Convention on Biological Diversity draft post-2020 global biodiversity framework has a target of 30% protected by 2030 on land and sea.

Over 100 million hectares of land and 68 million hectares on sea would have to be protected to reach 30% protection for each terrestrial and marine bioregion of Australia.² This would also require considerable investment in ecosystem regeneration and restoration in highly developed bioregions.

A major policy and funding initiative is necessary to realise this promise of 2030, but achieving it will bring enormous benefits to the Australian society and economy far exceeding the investment required.

² Although 33% of Australia’s marine territory is now contained within marine parks, not all bioregions have reached the 30% target, as shown below.



**THE CONVENTION ON BIOLOGICAL DIVERSITY
DRAFT POST-2020 GLOBAL BIODIVERSITY
FRAMEWORK HAS A TARGET OF 30% PROTECTED
BY 2030 ON LAND AND SEA.**



DR MARTIN TAYLOR
PROTECTED AREAS & CONSERVATION
SCIENCE MANAGER
WWF-AUSTRALIA

BUILDING NATURE'S SAFETY NET

AICHI TARGET



Australia has fallen short of meeting its promise to the international community to protect 10% of each bioregion by 2020.

GROWTH OF AUSTRALIA'S PROTECTED AREAS IS VITAL FOR BIODIVERSITY & ECONOMIC RECOVERY

PROGRESS STALLED

Most progress in protecting ecosystems and species happened in the first half of the 2010–20 decade. Progress has since stalled and actually gone backwards for some ecosystems.

LARGEST PROTECTED AREA DOWNGRADE IN HISTORY

Occurred in 2018, when commercial fishing was allowed once more in vast areas of ocean formerly protected as marine national parks in 2012.

A NEW TARGET

The Convention on Biological Diversity draft post-2020 global biodiversity framework has a target of 30% protected by 2030 on land and sea.

IUCN III-VI

This is at odds with IUCN guidelines requiring that such uses be "low-level non-industrial" and "compatible with nature conservation". A growing body of research shows such areas are often no better at protecting biodiversity than unprotected areas.

An ongoing concern with protected areas in Australia is the growing dominance of multiple-use areas in IUCN categories III–VI, where commercial-scale natural resource harvest or extraction (like trawling) may be permissible.

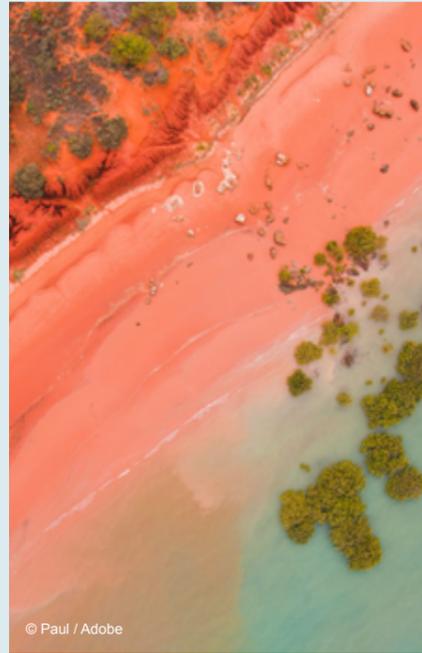
RECOMMENDATIONS

The Australian Government should:



PROTECT

Commit to bring at least 30% of each bioregion on land and sea under ecologically representative, well connected, effectively and equitably managed systems of protected areas by 2030, with an emphasis on key biodiversity areas and critical habitats for threatened species, including refuges and corridors to allow native species and ecosystems to safely shift their ranges in response to climate change.



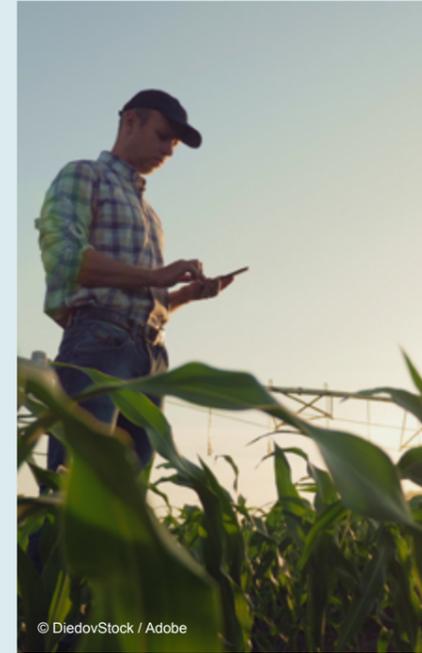
INVEST

Allocate sufficient investment toward land purchases and incentives for new private land covenants and Indigenous Protected Areas, to allow Australia to meet the promise of 2030. This is estimated to require multi-billion dollar investments over the coming decade, much of which could be achieved by modifying existing grant programs to perform the “double-duty” of delivering on the protected areas promise.



EVALUATE

Publish evaluations of the ecosystem services and economic recovery benefits of making this investment in the strategic protection of nature.



AUDIT

Institute a system to independently audit protected areas, especially those allowing commercial natural resource extraction, for management effectiveness and conformity with the IUCN protected area definition and management guidelines.



ENGAGE

Establish long-term financial security and capacity-building for Traditional Owners to be able to securely manage Indigenous Protected Areas and co-manage public reserves.



SUPPORT

Support and promote credible, certified sustainable agriculture and fisheries in the wider landscapes and oceans, complementary to or, ideally, directly contributing to the protected area system in conserving Australian biodiversity.

PROTECTED AREAS SAVE WILDLIFE



Hawksbill tracking project, Milman Island, February 2017 © WWF-Aus / Christine Hof

Protected areas are specific areas of land or sea set aside for nature, while also satisfying human non-material needs.⁴

This contrasts with landscapes or seascapes dedicated primarily to meeting human material demands for settlement, infrastructure, mines, crops, livestock, timber, fish and other extracted natural resources.

Protected areas remain the best way to conserve nature, because they not only prevent habitat destruction and degradation; they also represent a permanent change in management to actively conserve nature by tackling pervasive threats of climate change, fire, weeds and pests. This need not preclude commercial activities that are proven to be compatible with the primary conservation purpose, such as eco-tourism and carbon offsetting.⁵

Species richness and abundance is higher in protected areas than in unprotected control sites, although variances are high (Figure 1). When grazing land is newly protected and livestock removed, wildlife populations rebound rapidly.⁶

⁴ “A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”. Dudley, N. 2006. *Guidelines for Applying Protected Area Management Categories*. IUCN, Switzerland. <https://portals.iucn.org/library/sites/library/files/documents/PAG-021.pdf>

⁵ Taylor, M., 2015. Parks: The best option for wildlife protection in Australia. In *Protecting the Wild* (pp. 266-275). Island Press, Washington, DC.

⁶ Legge, S., et al. 2011. Rapid recovery of mammal fauna in the central Kimberley, northern Australia, following the removal of introduced herbivores. *Austral Ecology*, 36, 791-799

FIGURE 1.

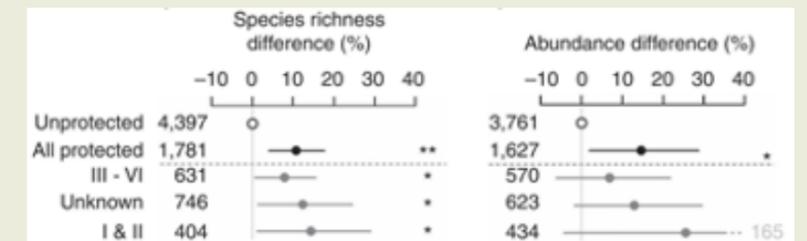


Figure 1. Species richness and abundance is higher in national parks (IUCN I-II) than in other protected areas (IUCN III-VI), and in all protected areas versus unprotected controls, in a global analysis including Australia.³

³ Reprinted with permission from Gray, C.L., et al. 2016. Local biodiversity is higher inside than outside terrestrial protected areas worldwide. *Nature Communications*, 7, p.12306. Note that rare and endemic biodiversity measures were not different. However, tropical rare and threatened birds were found to do better in protected areas than outside (Cazalis, V., et al. 2020, Effectiveness of protected areas in conserving tropical forest birds. *Nature Communications* 11, Article number: 4461).
In tropical Australia, there was no difference in native bird diversity inside and outside protected areas but this study did not compare with cleared or degraded habitats (Barnes, M., et al. 2015. Evaluating protected area effectiveness using bird lists in the Australian Wet Tropics. *Diversity and Distributions*, 21, 368-378).

The northern hairy-nosed wombat (*Lasiorhinus krefftii*) used to range from the Victorian border to northern Queensland. By the 1960s, populations had collapsed to just 30 animals in one small remnant of woodland in central Queensland, which was saved from extinction in a new national park in 1974.



© QUEENSLAND PARKS AND WILDLIFE SERVICE

PROTECTED AREAS ARE ECONOMICALLY VALUABLE

Because they save wildlife and wild places, protected areas provide many economically valuable benefits to Australian society, collectively termed “ecosystem services”.

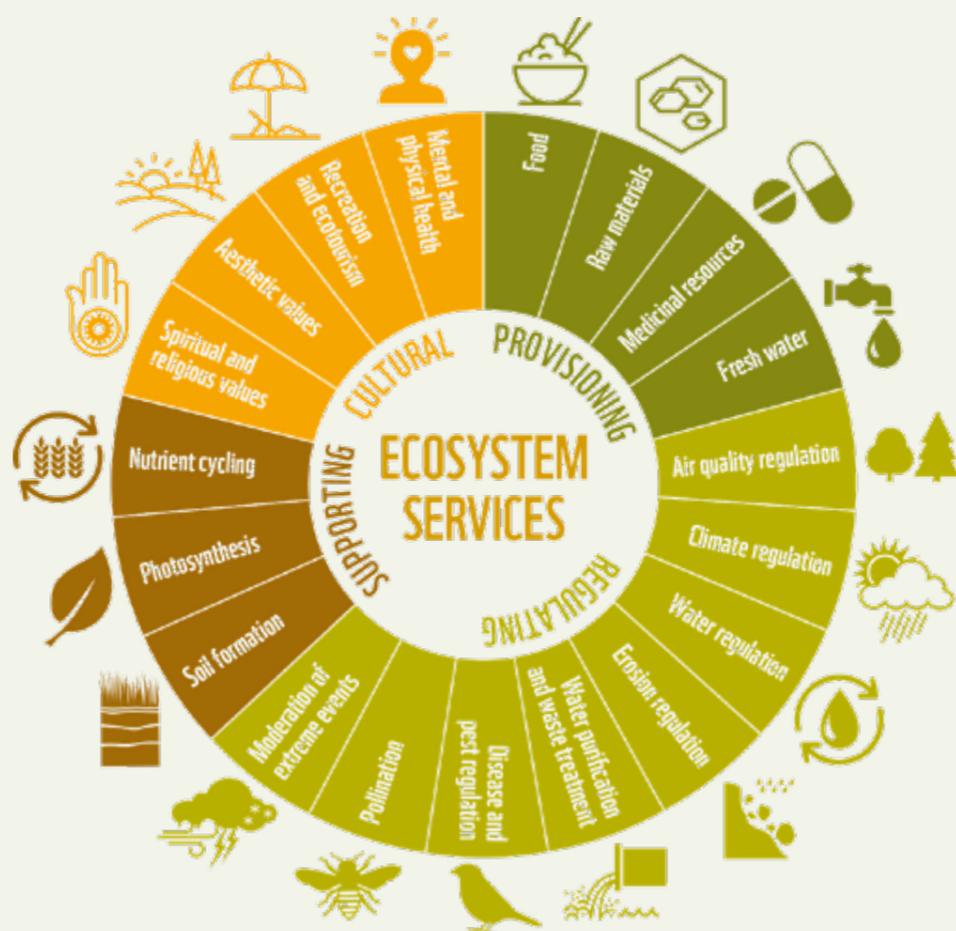


FIGURE 2.

Figure 2. The spectrum of benefits of nature (“ecosystem services”) that are conserved in protected areas.¹⁸

18 Figure 2. reproduced from Barrett, M., et al. 2018. *Living planet report 2018: Aiming higher*. WWF International, Switzerland.

“BOTH TRADITIONAL KNOWLEDGE ACCUMULATED OVER THOUSANDS OF YEARS AND CONTEMPORARY RESEARCH SHOW THAT SPENDING TIME IN NATURE IS GOOD FOR OUR MIND AND BODY.”

- AUSTRALIA'S STRATEGY FOR NATURE



Great Barrier Reef tourism. © Troy Mayne

These include recreation and health, Indigenous cultural and spiritual benefits, tourism, clean air and water, carbon sequestration and climate control, coastal protection, and conservation of economically valuable wild species like fish stocks, predators, pollinators, and agricultural or pharmaceutical genetic resources (Figure 2).

All of these services have real economic value, but only some may be able to be estimated reliably in dollar terms. This does not imply, however, that such services should be traded or marketed. Rather, such valuations allow for transparent decision-making. Decisions that allow destruction (or protection) of nature usually neglect to account for loss (or retention) of ecosystem services.⁷

The ecosystem services conserved in Australian protected areas are valued at \$38 billion a year on land and ~\$200 billion at sea.⁸

Ecosystem services conserved in protected areas are typically greater than the value realised by conversion to agriculture.⁹

Tourism is perhaps the ecosystem service easiest to quantify. Protected area tourism generates over US\$800 billion worldwide.¹⁰

7 Costanza, R., et al. 2017. Twenty years of ecosystem services: how far have we come and how far do we still need to go? *Ecosystem Services* 28, 1-16.

8 Taylor, M.F.J., et al. 2014. *Building Nature's Safety Net 2014: A decade of protected area achievements in Australia*. WWF-Australia.

9 Bradbury, R.B., et al. 2021. The economic consequences of conserving or restoring sites for nature. *Nature Sustainability*, <https://doi.org/10.1038/s41893-021-00692-9>

10 Balmford, A., et al. 2015. Walk on the wild side: estimating the global magnitude of visits to protected areas. *PLoS biology*, 13, p.e1002074.

In Australia, the nature tourism sector brings in \$20 billion a year in foreign exchange. Additionally, domestic visitors spend more than \$20 billion.¹¹ Nature tourists account for 68% of total tourism spending. They also stay longer and spend more than other tourists.¹²

In Queensland, national parks visitor spending, alone, returned about \$6.30 in value and benefits to the state economy for every dollar spent on national park visitor management - a very large “return on investment”.¹³

Protected areas improve local housing values, stimulate business and help local governments secure more funding in New South Wales.¹⁴

Indigenous Protected Areas benefit Indigenous communities socially and economically via tourism, ranger jobs and the maintenance of Indigenous connections to culture and country.¹⁵

Mental health benefits of visiting protected areas are estimated at US\$6 trillion a year worldwide.¹⁶ In Australia, mental illness costs society \$20 billion a year.¹⁷

11 Tourism and Transport Forum. 2017. *Unlocking our great outdoors*. p5

12 EcoTourism Australia. 2017. *Nature Based Tourism in Australia Manifesto v5*.

13 Driml, S., et al. 2020. *Estimating the value of national parks to the Queensland economy*. Discussion Paper 636, School of Economics, The University of Queensland (<http://www.uq.edu.au/economics/abstract/636.pdf>).

14 Heagney, E., et al. 2015. Socio-economic benefits from protected areas in southeastern Australia. *Conservation Biology* 29, 1647-1657.

15 Farr, M., et al. 2016. *Economic values and Indigenous Protected Areas across Northern Australia*. James Cook University, Townsville.

16 Buckley, R., et al. 2019. Economic value of protected areas via visitor mental health. *Nature Communications*, 10, 1-10.

17 Townsend, M. 2015. in Figgis, P. et al (eds) *Valuing nature: protected areas and ecosystem services*. Australian Committee for IUCN.

EFFECTIVE, PERMANENT PROTECTION VITAL

There are correlations between wildlife population sizes and increased investment in management across both marine¹⁹ and terrestrial protected areas.²⁰

This is particularly true for law enforcement in countries where timber or wildlife poaching is an issue. Conversely, where protected area management is weak or under-resourced, poaching increases.²¹

According to the IUCN definition and guidelines, low level, non-industrial natural resource uses may be permissible in some categories of protected areas, to the extent that it is compatible with the primary purpose of nature conservation.²²

However, there are no institutions or systematic processes in place to independently audit such “multiple use” areas, to evaluate whether the permitted resource uses are in fact compatible and consistent with the IUCN protected area definition and guidelines.

The IUCN Green List provides a system for assessing nominated protected areas for adherence to a high standard of management.²³ However, this is a more restricted “premium” application not intended for broadscale auditing for adherence to baseline protected area definitions and guidelines.

19 Gill, D., et al. 2017. Capacity shortfalls hinder the performance of marine protected areas globally. *Nature*, 543, p.665.

20 Geldmann, J., et al. 2018. A global analysis of management capacity and ecological outcomes in terrestrial protected areas. *Conservation Letters*, 11, p.e12434.

21 Critchlow, R., et al. 2017. Improving law-enforcement effectiveness and efficiency in protected areas using ranger-collected monitoring data. *Conservation Letters*, 10, 572-580; Hockings, M., et al. 2020. COVID-19 and protected and conserved areas. *Parks*, 26.1, 7-24.

22 Types V and VI in Dudley, N. 2006. *Guidelines for Applying Protected Area Management Categories*, IUCN, Switzerland.

23 For example, Protected Area Solutions. 2018. *Nature Refuges in Queensland: report to The Pew Charitable Trusts and Queensland Trust for Nature*; IUCN Green List of Protected and Conserved Areas website. <https://www.iucn.org/theme/protected-areas/our-work/iucn-green-list-protected-and-conserved-areas>

Where evidence is available, it tends to show that natural resource extraction undermines the primary purpose of nature conservation. Threatened species are better off in strictly protected areas on land (where the human use is limited to controlled visitation), than in other “multiple use” areas.²⁴ Species richness and abundance is higher in strictly protected areas than in other protected areas (Figure 1).

Most privately protected areas and, in some states even national parks, are not protected from mining in Australia.²⁵ Marine protected areas closed to all fishing are much more effective at conserving biodiversity than those that are not.²⁶ Trawling impacts in nominally protected marine areas question whether they can reasonably be considered protected at all.²⁷ The downgrading of protected areas is a significant problem in Australia, especially for marine protected areas.²⁸ However, degazettement appears to be a low risk for privately protected areas to date.²⁹

24 Taylor, M., et al. 2011. What works for threatened species recovery? An empirical evaluation for Australia. *Biodiversity and Conservation*, 20, 767-777.

25 Adams, V.M. and Moon, K. 2013. Security and equity of conservation covenants: contradictions of private protected area policies in Australia. *Land Use Policy*, 30, 114-119.

26 Sala, E. and Giakoumi, S. 2018. No-take marine reserves are the most effective protected areas in the ocean. *ICES Journal of Marine Science*, 75, 1166-1168.

27 Dureuil, M., et al. 2018. Elevated trawling inside protected areas undermines conservation outcomes in a global fishing hot spot. *Science*, 362, 1403-1407.

28 Albrecht, A., et al. 2021. Protected area downgrading, downsizing, and degazettement (PADDD) in marine protected areas. *Marine Policy* doi.org/10.1016/j.marpol.2021.104437

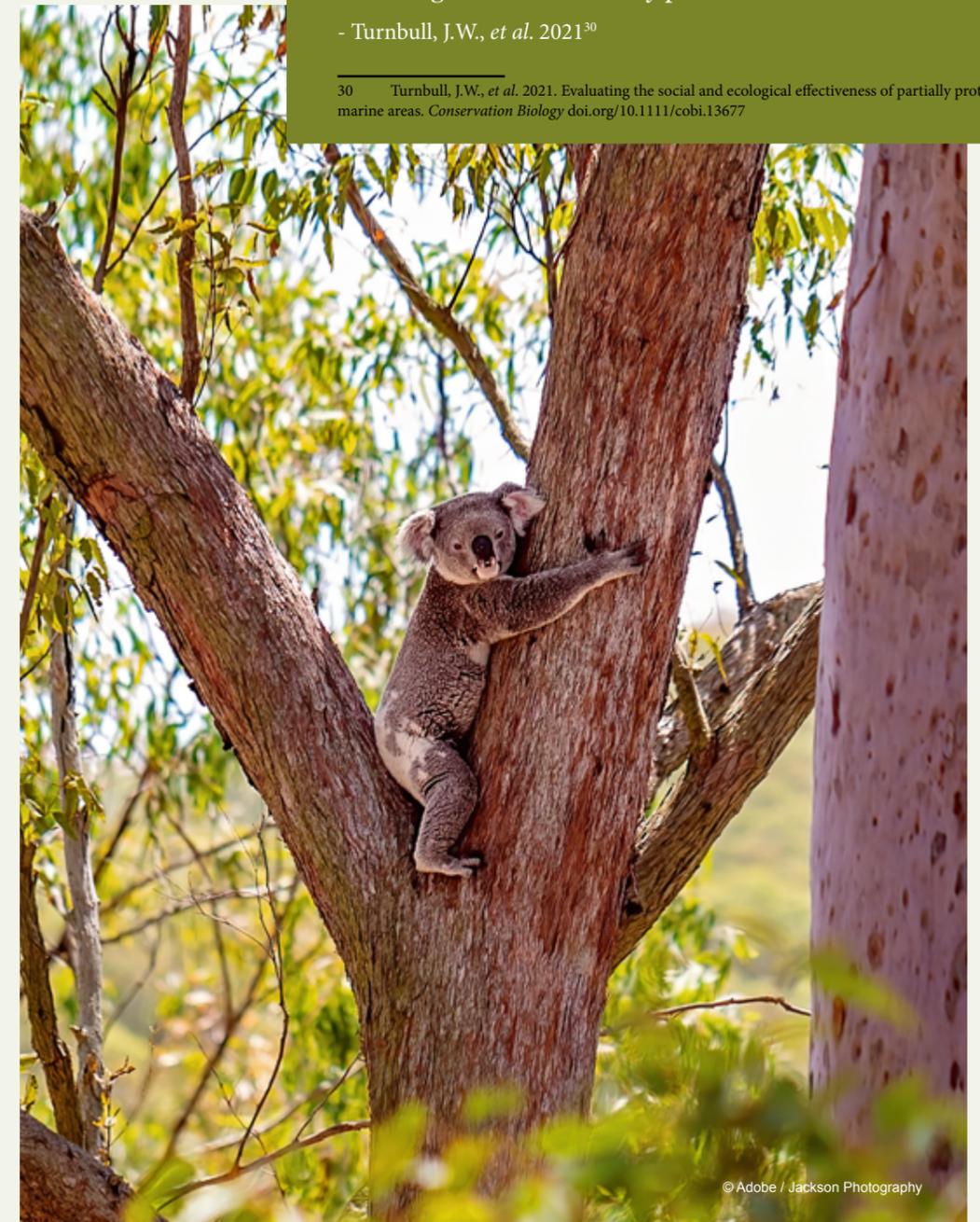
29 Hardy, M.J., et al. 2017. Exploring the permanence of conservation covenants. *Conservation Letters*, 10, 221-230.

“...partially protected areas ... provide little or no social or ecological gain over open areas. Fully protected areas, by contrast, have more fish species and biomass and are well understood, supported, and valued by the public ...

Conservation outcomes can be improved by upgrading partially protected areas to higher levels of protection including conversion to fully protected areas.”

- Turnbull, J.W., et al. 2021³⁰

30 Turnbull, J.W., et al. 2021. Evaluating the social and ecological effectiveness of partially protected marine areas. *Conservation Biology* doi.org/10.1111/cobi.13677



© Adobe / Jackson Photography

CHALLENGES OF A WARMING CLIMATE



Kookaburra looking on its destroyed home after a bushfire passed, Wallabi Point, NSW.
© Adam Stevenson

Smaller protected area networks that once adequately protected wildlife may no longer be effective, due to the large and rapid shifts in habitat suitability occurring due to climate change. This is an acute problem for low dispersal, restricted range species.³¹

Critical habitats for wildlife must now include not only where they can currently live, but future refuges and natural corridors to get there.

Increasingly severe bushfires, droughts, storms, ocean acidification, coral bleaching and habitat shifts predicted under a warmer climate have become the new reality, with profound impacts on biodiversity, ecosystem services and human wellbeing.³² Climate change demands a much larger, and better-connected protected area system to allow for higher levels of habitat disturbance, and to allow native animals and plants to shift their ranges freely and seek refuge from increased stress and disturbance.

Protected areas are critical, for people and nature, to adapt to climate change and build resilience. They also help to mitigate climate change naturally, by protecting and building biodiverse carbon sinks that absorb excess CO₂ from the atmosphere.³³

The principles of ecological representation that already underpin agreements on strategic protected area growth³⁴ have been shown to be a robust means of adapting to climate change.³⁵ The protection given to native species by the current protected area system is poor based on current species distributions, but is not estimated to be significantly poorer when based on future climate-shifted distributions.³⁶ However, of 504 threatened terrestrial species in Australia, 14% are predicted to lose their habitat completely by 2085 under business-as-usual emissions and climate change. This raises the difficult question of what any protected area system could do to save such species, beyond highly localised protected areas for captive breeding?³⁷

A protected area system can be designed to protect threatened species to a minimum standard by protecting future climate-shifted habitats. However, the current system misses a substantial fraction of what is modelled as necessary. At least another 80 million hectares of land would require protection, even without taking into account the need to adapt to climate extremes.³⁸

More frequent and extreme weather events associated with climate change, including drought and bushfires, will result in the loss of habitats for native species, perhaps permanently. Identification of critical habitats for protection - that is, those habitats needed for the species to recover and persist indefinitely - now needs to take into account the future risks of such losses, as well as the shifts in species ranges due to climate change.³⁹

³¹ MacLean, S.A. and Beissinger, S.R. 2017. Species' traits as predictors of range shifts under contemporary climate change: A review and meta-analysis. *Global Change Biology* doi.org/10.1111/gcb.13736.

³² Pecl, G.T., et al. 2017. Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being. *Science*, 355(6332), 1-9.

³³ WWF. 2015. *Protected Areas Natural Solutions to Climate Change - Policy Brief*.

³⁴ The CAR principle that the protected area system be designed to be comprehensive, adequate and representative of the full array of natural ecosystems underpins the national strategy. Natural Resource Management Ministerial Council, 2009. *Australia's Strategy for the National Reserve System 2009-2030*.

³⁵ Dunlop, M., et al. 2012. *The implications of climate change for biodiversity conservation and the National Reserve System: Final synthesis*. CSIRO Climate Adaptation Flagship, Canberra.

³⁶ Reside, A., et al. 2013. *Climate change refugia for terrestrial biodiversity. Defining areas that promote species persistence and ecosystem resilience in the face of global climate change*. National Climate Change Adaptation Research Facility, Gold Coast, 216 pp.

³⁷ Maggini, R., et al. 2013. *Protecting and restoring habitat to help Australia's threatened species adapt to climate change*. National Climate Change Adaptation Research Facility, Gold Coast, 54 pp.

³⁸ *ibid.*

³⁹ Fitzsimons, J.A. 2020. Urgent need to use and reform critical habitat listing in Australian legislation in response to the extensive 2019-2020 bushfires. *Environmental and Planning Law Journal*, 37, 143-152.

THE PROMISE OF 2020

Under the Convention on Biological Diversity (CBD), state parties including Australia committed in 1992 to:

“Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity” (article 8A).⁴⁰

Australia, in 2010, also committed to the CBD Aichi Target 11:

“By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape”⁴¹;

where ecologically representative means:

“protected area systems should contain adequate samples of the full range of existing ecosystems and ecological processes, including at least 10% of each ecoregion within the country”⁴² (emphasis added).

This is reflected in the National Reserve System Strategy 2009-2030, which states:

“Priority [for expansion] will be given to under-represented IBRA bioregions with less than 10 per cent protected in the National Reserve System”⁴³

⁴⁰ <https://www.cbd.int/doc/legal/cbd-en.pdf>

⁴¹ <https://www.cbd.int/sp/targets/rationale/target-11/>

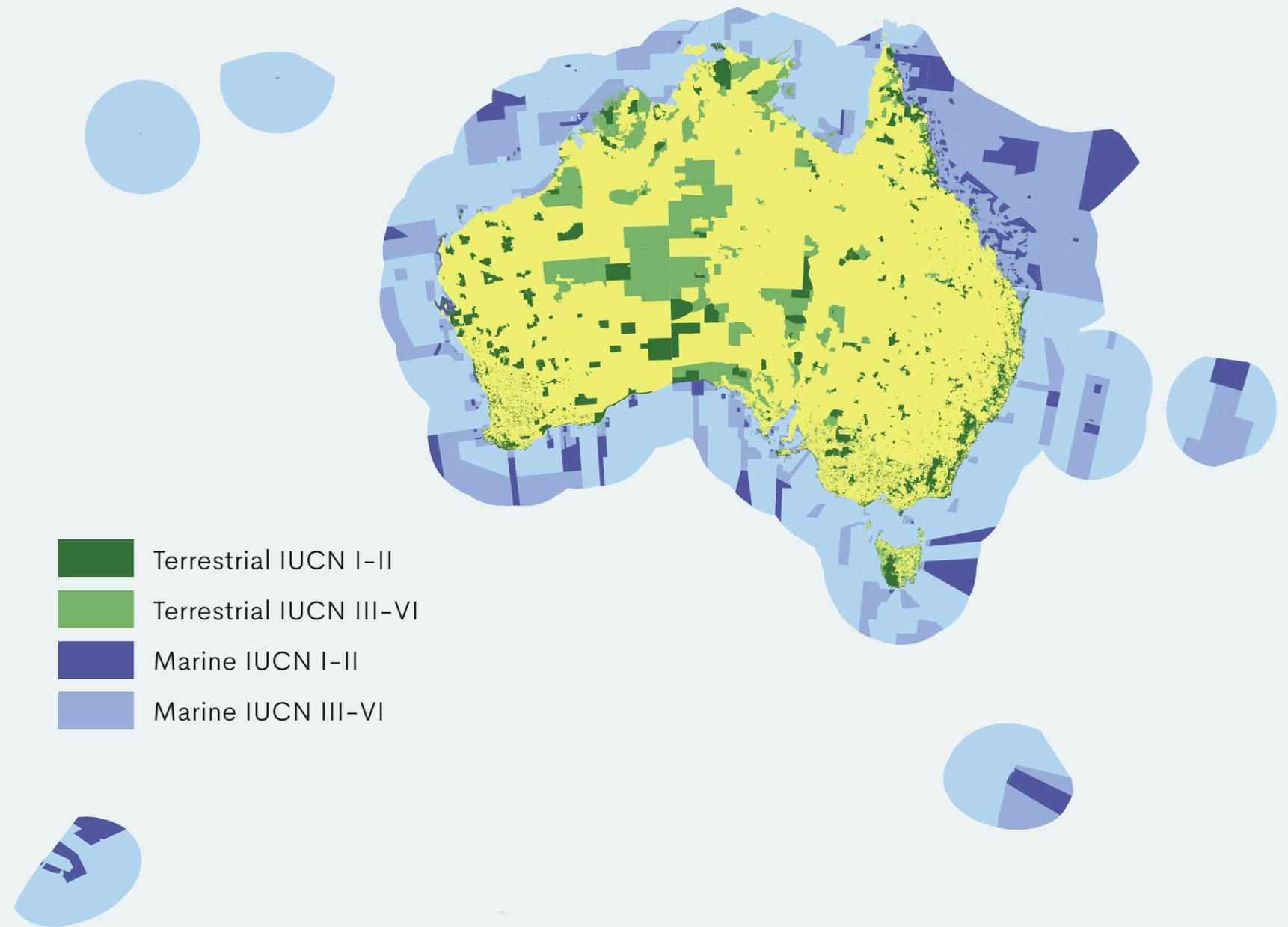
⁴² <https://www.cbd.int/doc/strategic-plan/targets/T11-quick-guide-en.pdf>

⁴³ Natural Resource Management Ministerial Council (NRMCC). 2009. *Australia's Strategy for the National Reserve System 2009-2030*.

FIGURE 3.

Figure 3. Australia's protected areas in 2020.⁴⁴

⁴⁴ Source: Department of Agriculture, Water and Environment, *Collaborative Australian Protected Areas Database 2020* release, or CAPAD 2020.



PROGRESS TO 2020 PROMISE

The National Reserve System grew considerably⁴⁵ in the few years before and after 2010.

- In 2007-8 the Australian Government allocated \$180 million to the National Reserve System Program, which resulted in over two million hectares of important wildlife habitat purchased for protection at only \$44 a hectare, leveraging six times that amount in state or territory co-investment, including in-perpetuity management.⁴⁶
- The National Reserve System Program also funded major land purchases for Traditional Owners, such as Fish River in the Northern Territory, Tallaroo Station in Queensland, and Mawonga in NSW.
- The Indigenous Protected Area (IPA) and Working on Country Indigenous ranger programs also received a \$150 million boost in 2007, opening up a period of rapid growth of community governance of protected areas from 3.1% in 2010 to 8.7% of Australia in 2018, mostly in the arid centre and west (Figures 3, 4).
- Equity and inclusiveness of management also further (if slightly) improved as Indigenous joint management of public protected areas rose from 1.1% to 1.4% of Australia's land area (Figure 4).
- A national strategy for the terrestrial National Reserve System was agreed by all jurisdictions in 2009.⁴⁷ Terrestrial protected areas grew from 13.4% to 19.7% of Australia's land area from 2010 to 2020 (Figures 3, 5).
- The national strategy for marine protected areas was last agreed to in 1999.⁴⁸ The Commonwealth Marine Parks system expanded in 2012 to all Australian waters, pushing the national marine reserve system from 9.4% in 2010 to 35.8% of all waters in 2016, and to 36.1% by 2020, including all jurisdictions (Figures 3, 5).

45 For simplicity, "National Reserve System" will be used here to refer collectively to the terrestrial National Reserve System and National Representative System of Marine Protected Areas (or NRSMPA) and includes the entire protected area system of public, private and Indigenous owned or managed protected areas.

46 Taylor, M.F.J., et al. 2014. *Building Nature's Safety Net 2014: A decade of protected area achievements in Australia*. WWF-Australia.

47 NRMCC. 2009. Cited above.

48 ANZECC. 1999. *Strategic Plan of Action for the National Representative System of Marine Protected Areas: A guide for action by Australian Governments*. Environment Australia, July 1999.

FIGURE 4.

Figure 4. Changes in terrestrial protected areas governance categories.⁴⁹

49 Sources: CAPADs 2010, 2016 and 2020.

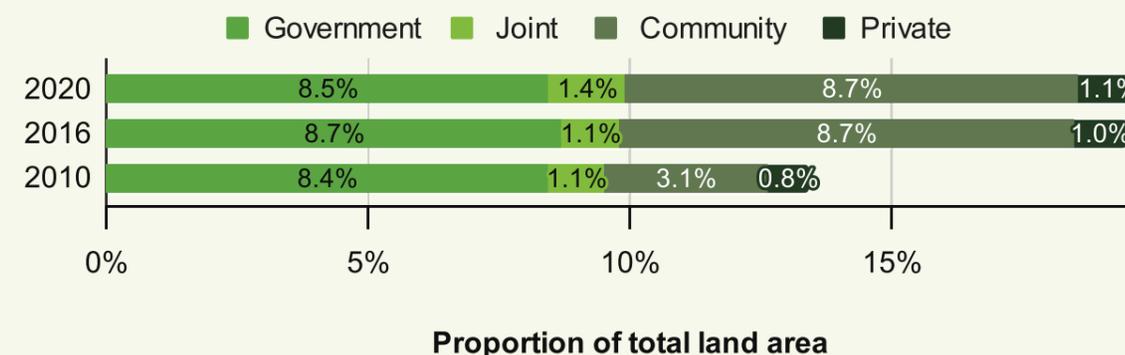
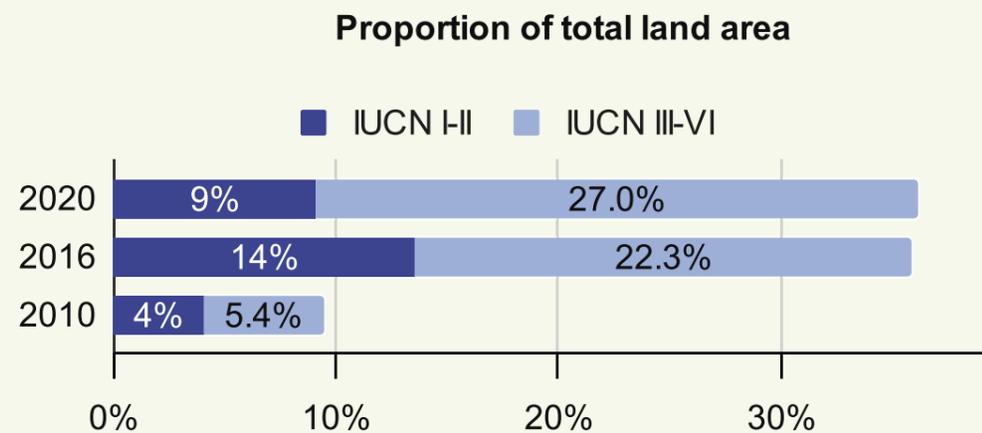
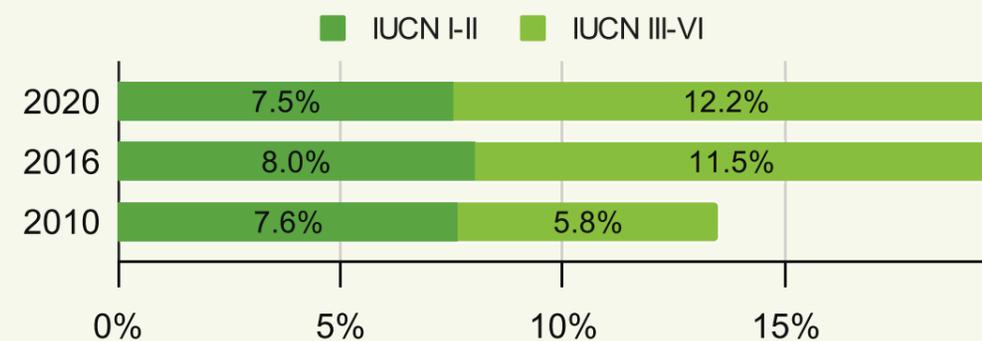


FIGURE 5.

Figure 5. Changes in terrestrial and marine protected areas IUCN management categories 2010-2020.⁵⁰

50 Sources: CAPADs 2010, 2016 and 2020. IUCN I-II comprise "strictly protected areas" like national parks, while categories III-VI "multiple-use areas" may include significant natural resource extractive activities.



PROGRESS STALLS, NATIONAL PARKS GO BACKWARDS

Despite this progress, the successful National Reserve System grants program was terminated in 2012-13 and has not been renewed.



Wairuna Lake and Wetlands, Burdekin River headwaters, Girringun National Park, purchased with National Reserve System Program grants 2008-12.



Purple-crowned fairy wren, WA © WWF-Aus / Alexander Watson

Apart from Indigenous Protected Areas, protected area growth on land and sea has virtually stalled, with most of the progress over the decade accomplished in the first half before 2016 (Figure 5).

The terrestrial national parks area (IUCN I-II) actually reversed by about a million hectares after 2016 as management categories were re-evaluated by some jurisdictions (from 8% down to 7.5% of Australia's land area, Figure 5).

Properties purchased to become protected areas under the former National Reserve System program and listed in previous CAPADs as part of the NRS, in some cases over a decade ago, still have not been protected and remain partly open to mining. For example, Bimblebox Nature Refuge in central Queensland was purchased by the National Reserve System Program in 2000, and gazetted as a private "nature refuge" under state law. However the state of Queensland then overlaid the nature refuge almost entirely by approvals for an open-cut coal mine, disregarding the fact that it had been purchased with Commonwealth funds and protected under state laws. The mine is yet to commence, however.⁵¹ In Western Australia, the pastoral leases Karara and Warriedar were purchased for NRS protection in 2002, but subsequently subjected to iron ore and gold mining and supporting infrastructure.⁵²

Two nature refuges were revoked on Cape York in Queensland after 2016.⁵³

51 Adams, V.M. and Moon, K. 2013. Security and equity of conservation covenants: contradictions of private protected area policies in Australia. *Land Use Policy*, 30, 114-119.

52 Matt Whitting pers. comm.

53 Strathburn Cattle Station and Astrea per *Nature Conservation (Protected Areas) (Nature Refuges) Amendment Regulation 2016* and *Nature Conservation (Protected Areas) Amendment Regulation (No. 1) 2018*.

An additional one million hectares, in 23 nature refuges in Queensland considered part of the NRS, were discovered to have never been permanently protected by law, at odds with the IUCN definition of a protected area. Castlevale nature refuge - which protected the largest remaining intact stand of endangered brigalow - was sold in 2020 and lost its temporary protection as a result, with the state environment department forced to renegotiate protection.⁵⁴

Recognising that nature refuge protection was inadequate, the Queensland Government in 2019 amended the *Nature Conservation Act* to allow for a new category of "special wildlife reserves" with the same level of protection as national parks. Bush Heritage Australia's Pullen Pullen Reserve became the first such reserve to be declared (See Box 3).⁵⁵

Marine national park extent (also termed "green zones" or "no-take areas") also reversed dramatically from 2016 to 2020 (from 13.5% down to 9.1% of Australian waters, Figure 5) due to the major rezoning of Commonwealth marine parks, finalised in 2018 to reopen large areas of the Coral Sea and other regions to commercial fishing (including trawling). This represents the largest downgrade of the level of protection of protected areas in history.⁵⁶

54 National Parks Association of Queensland, et al. 2020. *Lost opportunities for new national parks in Queensland*, and QPWS staff pers. comm.

55 <https://environment.des.qld.gov.au/wildlife/nature-refuges/special-reserves>

56 Albrecht, A., et al. 2021. Protected area downgrading, downsizing, and degazettement (PADDD) in marine protected areas. *Marine Policy* doi.org/10.1016/j.marpol.2021.104437



4.4%

REVERSAL OF GREEN ZONES IN AUSTRALIAN WATERS DURING 2016-2020

THIS REPRESENTS THE LARGEST DOWNGRADE OF LEVEL OF PROTECTION OF PROTECTED AREAS IN HISTORY.



ECOLOGICALLY REPRESENTATIVE

As a result of the neglect of national protected areas policy and leadership in the latter half of the 2010-20 decade, Australia has fallen short of the 2020 Aichi Target 11 in regard to ecological representation.

Although the overall land area protected is nearly 20% and marine protected areas cover over 37% (Figure 5), the reserve system does not meet Aichi Target 11 “ecologically representative” criterion of “including at least 10% of each ecoregion within the country”, which in Australia are termed bioregions.⁵⁷ Indeed:

- Of 43 marine bioregions, 6 (14%) are still below 10%, mostly in south-eastern waters (Figures 6, 7); and
- Of 88 terrestrial bioregions (excluding the Coral Sea), 61 reached 10% of area protected, while 27 (31%) are still below 10% protected, mostly in inland Australia and particularly Queensland (Figures 6, 7).

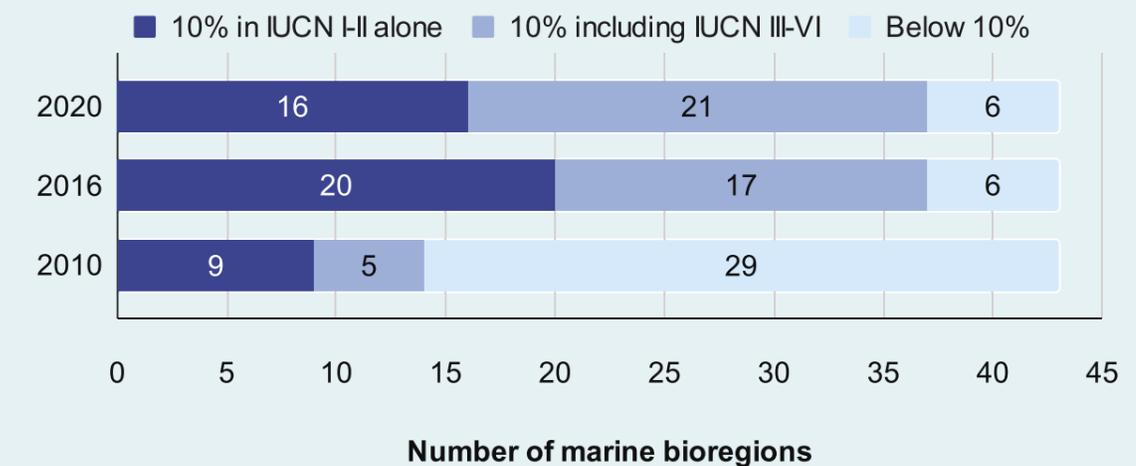
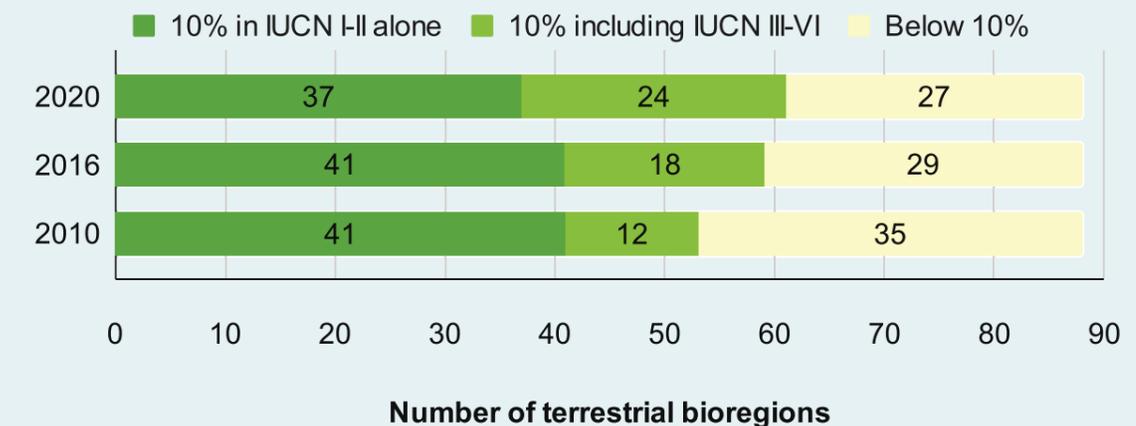
Progress over the decade was modest for terrestrial protected areas. Terrestrial bioregions reaching 10% rose from 53 to 61 of 88 (60% to 69% of bioregions, Figure 6).

However, great progress was made over the decade in marine bioregional protection, with the proportion reaching 10%, rising from 14 (35%) to 37 of 43 (86%) (Figure 6).

⁵⁷ <https://www.cbd.int/sp/targets/rationale/target-11/>

FIGURE 6.

Figure 6. Numbers of 88 bioregions on land and 43 on sea meeting the 10% minimum bioregional protection target in 2010, 2016 and 2020.



TERRESTRIAL ECOSYSTEM PROTECTION

Ecological representation below the bioregional scale is a commitment of Australian, state and territory governments under the National Reserve System 2030 strategy, with a comprehensiveness target by 2030 to “Include examples of at least 80 per cent of the number of regional ecosystems in each IBRA region” and representativeness target to “Include examples of at least 80 per cent of the number of regional ecosystems in each IBRA subregion”.⁵⁸ The former target is redundant because it would inevitably be achieved by achieving the latter. The strategy does not set any minimum standard for what “examples” means, nor any targets for adequacy.

We propose a standard for an “example” to be minimally adequate to count towards these representation targets. A minimally adequate “example” was set at 15% of the original extent of each ecosystem, with higher proportions for small ecosystems.⁵⁹ We applied this standard to terrestrial ecosystem proxies created by intersecting IBRA subregions (version 7) with NVIS major vegetation subgroups (version 6), excluding unclassified vegetation or combinations smaller than 100 hectares in total size.

Chief findings include:

- Only 37% (2,218) of ecosystems are protected to this minimum standard, well below the 80% target of the

⁵⁸ NRMCC. 2009. Cited above.

⁵⁹ The 15% standard is loosely based on the JANIS criteria. Standard is 100% if total area is less than 1000ha, and 1000ha minimum if 15% of total area is less than 1000ha. See Taylor, M.F.J., et al. 2014. *Building Nature's Safety Net 2014: A decade of protected area achievements in Australia*. WWF-Australia.

- national strategy (Figure 8).
- Attainment was lowest in Queensland, for woodland ecosystems and smaller ecosystems (Figure 8).
- Tasmania has the highest attainment, with only one ecosystem lacking any protection (Figure 8).
- Attainment has only shown modest improvement over the decade, rising from 1,984 in 2010 to 2,218 ecosystems attaining the standard in 2020, with most of that rise in the first half of the decade (Figure 8).
- 26% (1,542) of ecosystems lack any protection, with the largest components being smaller (<1500 hectares) ecosystems (552), woodland ecosystems (765) and ecosystems in Queensland (633) (Figure 8).
- When expressed by area of target rather than number of ecosystems, the situation appears relatively improved (Figure 9).
- Of a total target of 115 million hectares across all ecosystems to reach the nominal 15% standard with each ecosystem, 49% was attained in 2020, up from 40% in 2010, although again, the entire improvement was achieved by the first half of the decade (Figure 9).
- The gap of 50.2 million hectares in 2010 has been cut to 42.8 million hectares to reach the overall target. The largest contributors to this gap are the largest ecosystems by size (>61,525 hectares) (38.6 million hectares), in Queensland (15 million hectares) and woodland ecosystems (25.13 million hectares) (Figure 9).

FIGURE 7.

Figure 7. Terrestrial and marine bioregions reaching the 10% ecological representation subtarget of Aichi Target 11 in 2020.

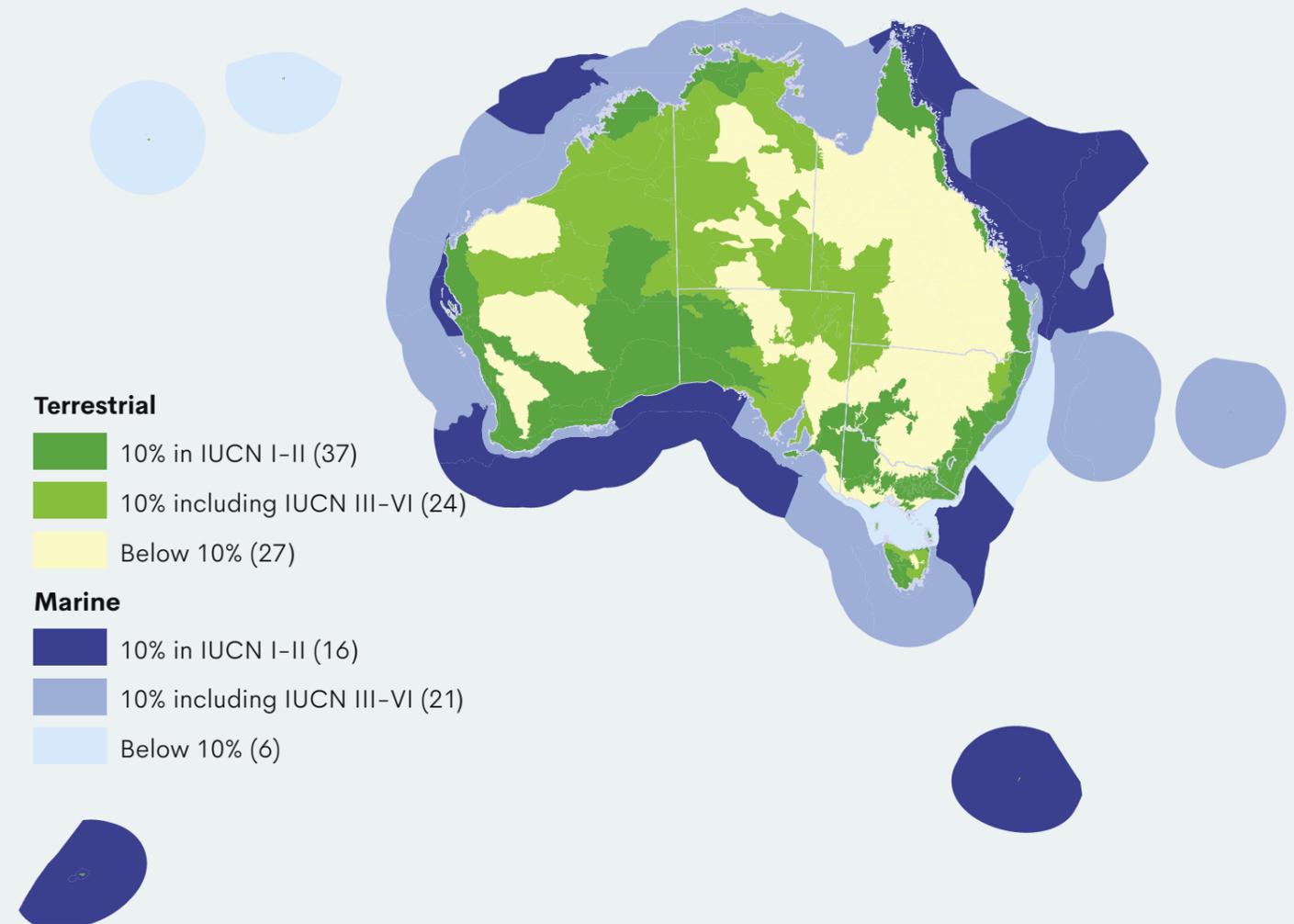


FIGURE 8.

Figure 8. Of 6,001 terrestrial proxy ecosystems, number sampled in protected areas to a minimum 15% standard, by IUCN category, state, type, ecosystem size and time.

■ Met with IUCN I-II alone
 ■ Met including IUCN III-VI
 ■ Over halfway to target
 ■ Under halfway to target
 ■ No protection at all

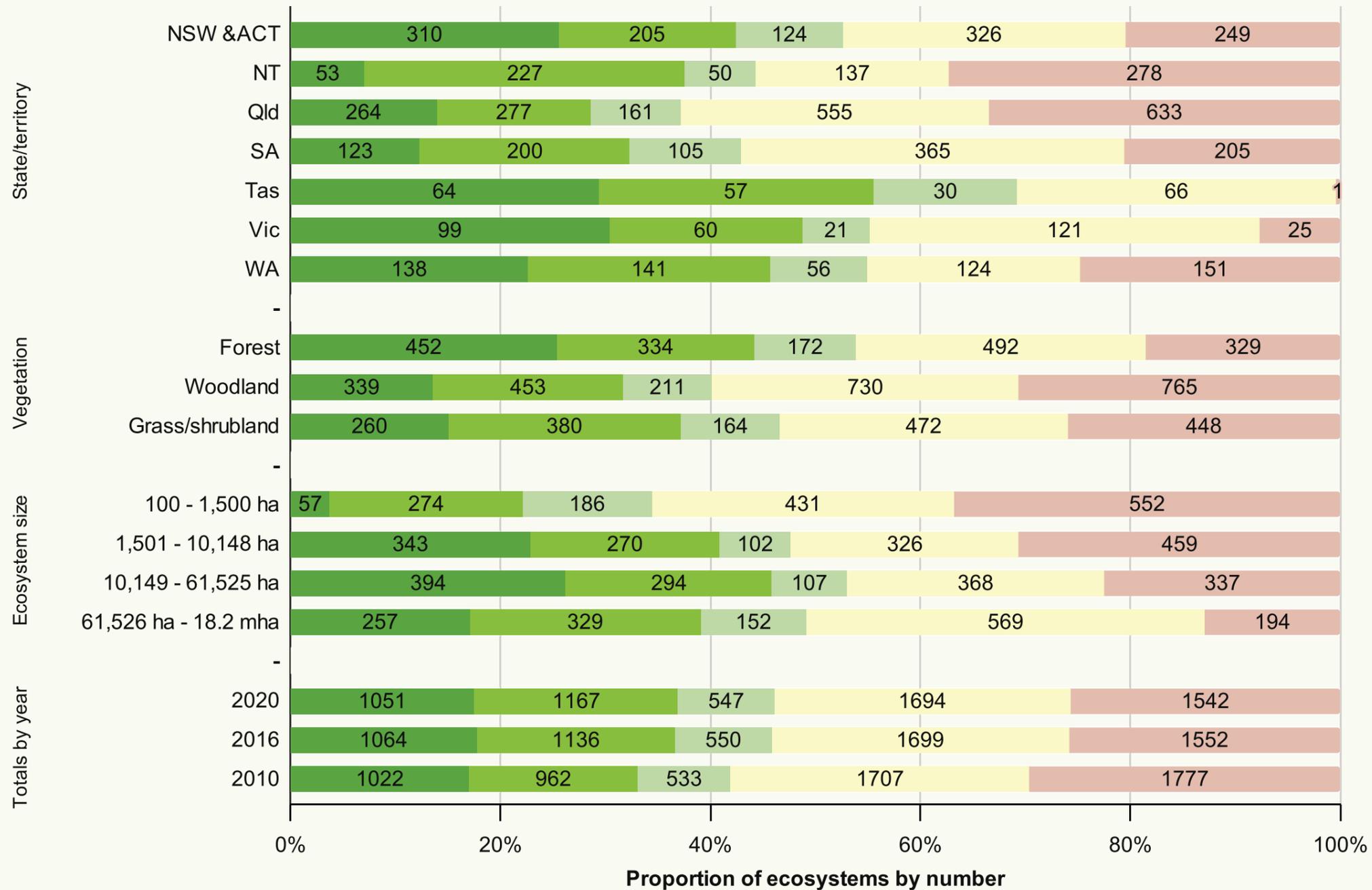


FIGURE 9.

Figure 9. Proportions of target area totalled across terrestrial proxy ecosystems needed to reach a minimum 15% standard for each, by state, vegetation type, ecosystem size and time, and showing total gap yet to be protected to meet the standard for each ecosystem (units are millions of hectares).

■ Ecosystems protected to standard in IUCN I-II alone ■ ... and including IUCN III-VI ■ Partly protected ecosystems ■ Unprotected (gap)

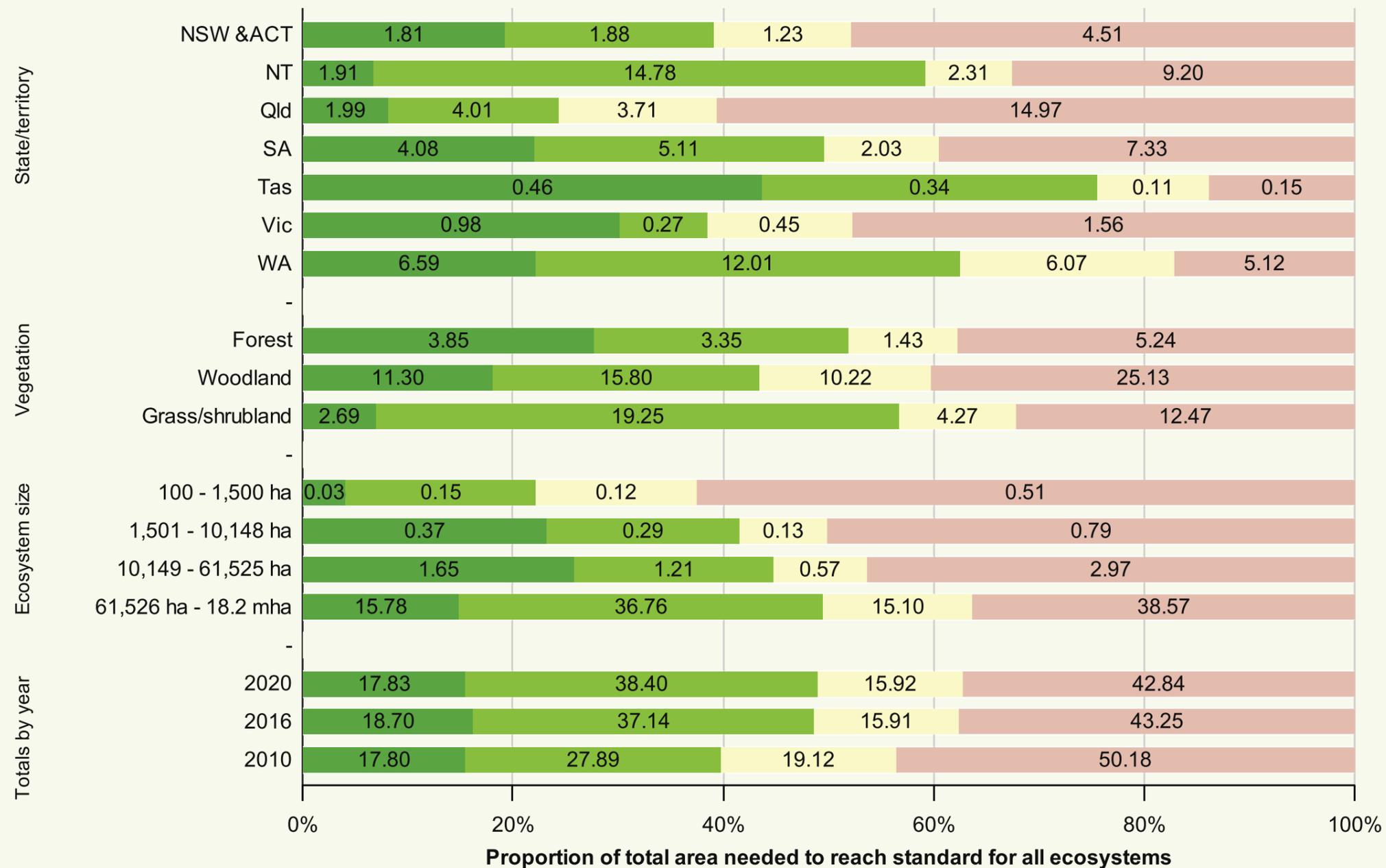


FIGURE 10.

Figure 10. Numbers of 920 marine ecosystems sampled in protected areas to a minimum 15% standard, by jurisdiction, environment, ecosystem size and time.

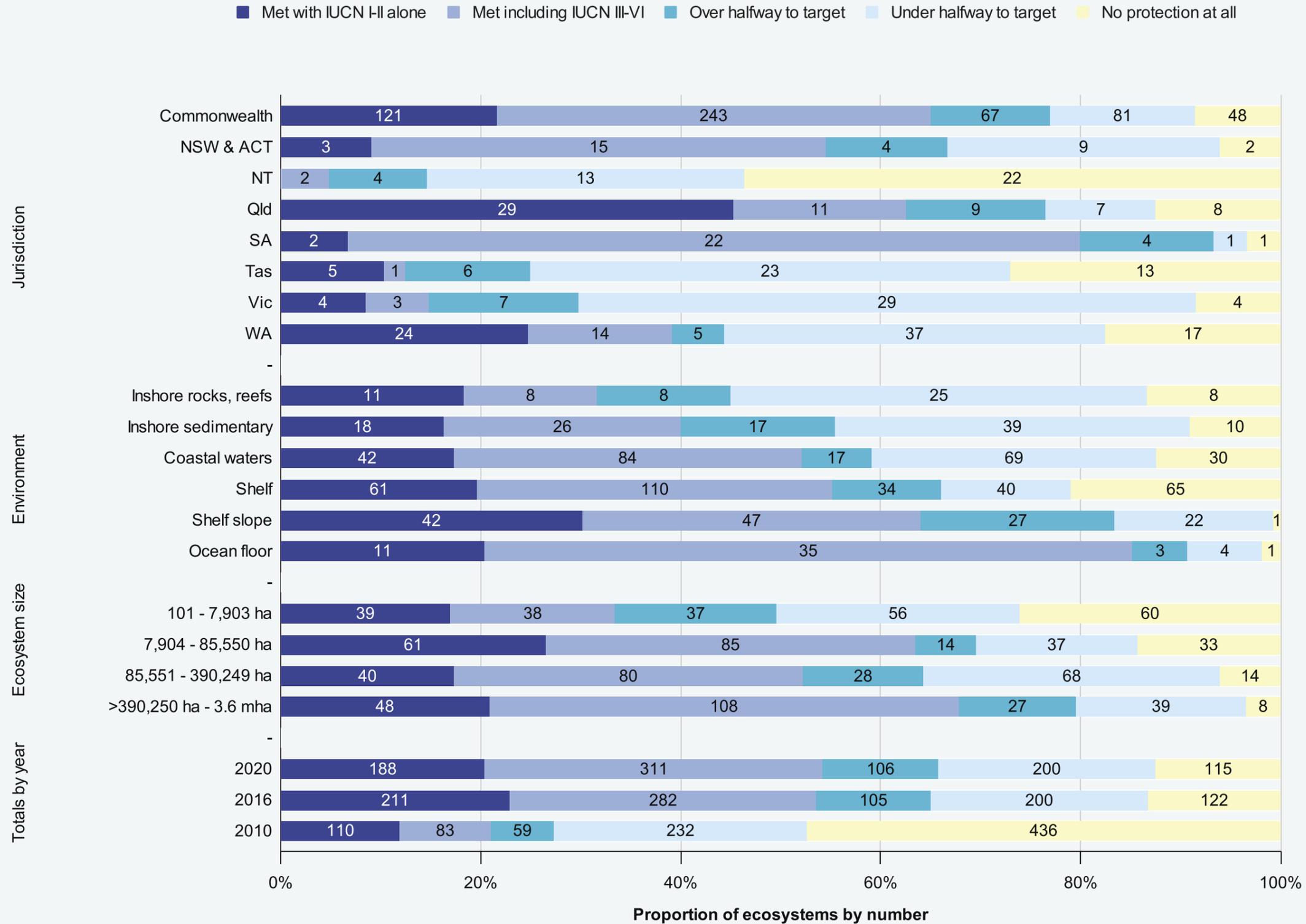
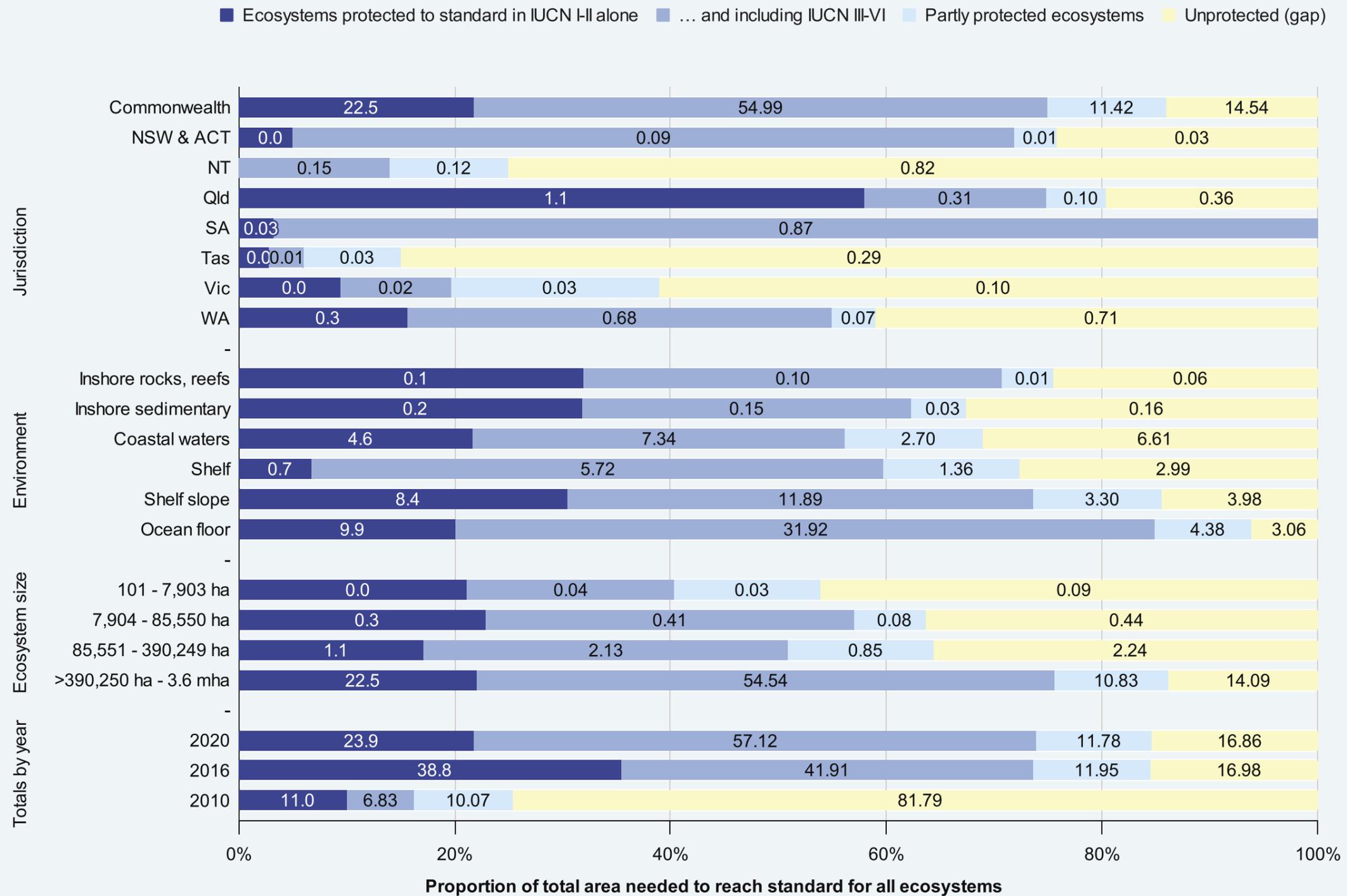
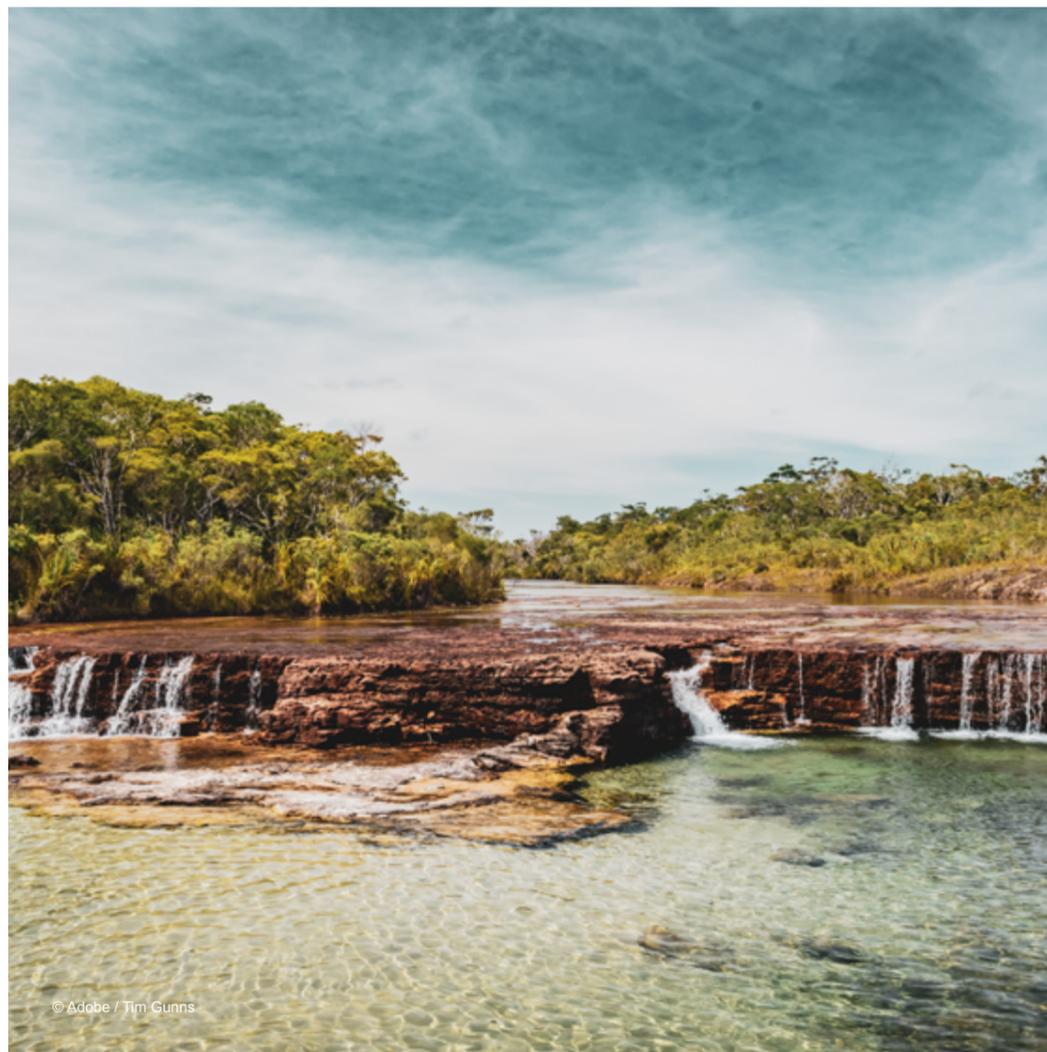


FIGURE 11.

Figure 11. Proportions of total protection target area across all marine ecosystems needed to reach a minimum 15% standard for each, by jurisdiction, environment, ecosystem size and time, and showing total gap yet to be protected to meet the standard (units are millions of hectares).



SPECIES AND ECOSYSTEMS OF NATIONAL SIGNIFICANCE - GALLERY



Clockwise from **top left: southern black-throated finch**. In 2020, the bird was listed as “Endangered” in Queensland, deforestation has resulted in the loss of around 80% of its former range.

Top centre: Bimblebox Nature Refuge in central Queensland was purchased by the National Reserve System Program in 2000, and gazetted as a private “nature refuge” under state law. However the state of Queensland then overlaid the nature refuge almost entirely by approvals for an open-cut coal mine, disregarding the fact that it had been purchased with Commonwealth funds and protected under state laws.

Top right: Aerial view of coal seam gas mining in the Pilliga, which has a complex mix of land ownership and management. The Pilliga forest is a national biodiversity hotspot, a globally listed important bird area and key biodiversity area.

Centre bottom: Cape York. The Cape York land tenure resolution program has returned more than 4m hectares of land to traditional owner groups since 2007. A portion of Cape York land handed to traditional owners is classified national park and protected, but about half is granted as ‘freehold’. (Image for illustrative purpose only).

Bottom left: southern right whale. The Great Australian Bight Marine Park protects a globally important calving and gathering area for endangered southern right whales, many conservation groups are calling for permanent protection from oil drilling in the Bight.

Left middle: aerial view of Tarkine forest, Tasmania, home to more than 60 species of rare, threatened and endangered species, including the Tasmanian Devil, local campaigners say plans for a new tailings dam threatens wilderness that should be declared a heritage area.

MARINE ECOSYSTEM PROTECTION

In 1999, ANZECC (the Australian and New Zealand Environment and Conservation Council) published the *Strategic Plan of Action for the National Representative System of Marine Protected Areas: A Guide for Australian Governments*. The plan did not set targets for comprehensiveness, adequacy or representativeness (CAR). In 2006, a scientific review proposed guidelines for CAR in Commonwealth marine areas but few quantitative targets. The minimum ecosystem protection standard recommended was 10-50%. The 2003 IUCN World Parks Congress recommended at least 20%.⁶⁰ As a compromise, WWF proposes the same 15% minimum adequate protection standard as for terrestrial ecosystems.

There is no national map of marine ecosystems against which to test the attainment of minimum standards. WWF developed a map of 920 marine ecosystems using multiple sources of government data, as described in our 2014 *Safety Net* report.⁶¹ We segregated ecosystems by jurisdiction and bioregion and intersected with the reserve system, as mapped by CAPAD 2010, 2016 and 2020.

Chief findings were that:

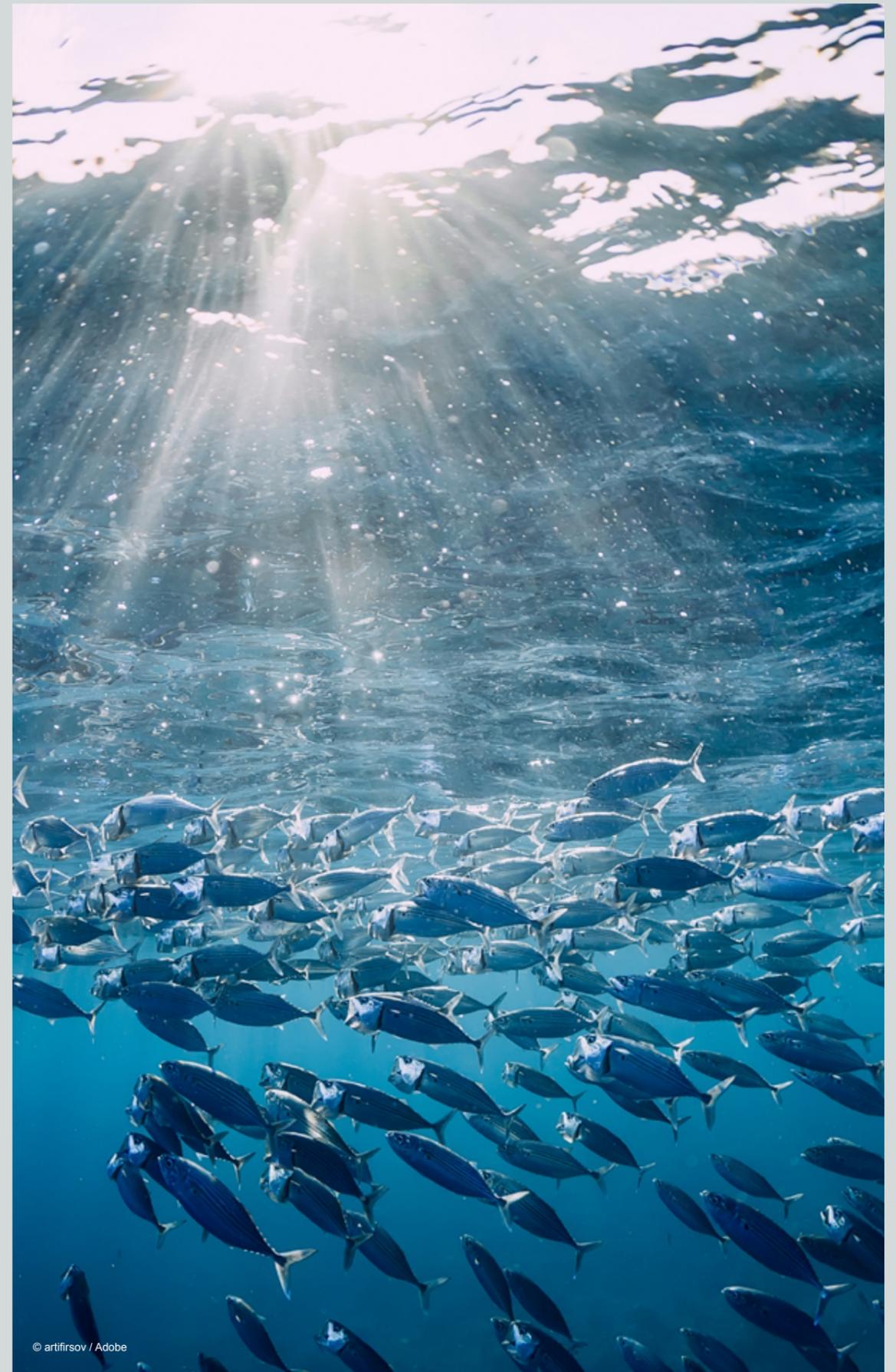
- Only 54% (499) of marine ecosystems are protected to a minimum standard, despite the significant increase from just 21% (193) in 2010 (Figure 10).
- Considering the multiple analyses showing that partly protected areas (IUCN III-VI) are no better than unprotected areas, this level of attainment may be exaggerated. Only 188 (20%) of 920 ecosystems are protected to a minimum standard in national parks or equivalents, and this has declined

⁶⁰ Scientific Peer Review Panel for the National Representative System of Marine Protected Areas. 2006. *Guidance on achieving comprehensiveness, adequacy, and representativeness in the Commonwealth waters component of the National Representative System of Marine Protected Areas*. <https://parksaustralia.gov.au/marine/pub/scientific-publications/archive/guidance-nrmpa.pdf>

⁶¹ Taylor, M.F.J., et al. 2014. Cited above.

from 211 (23%) prior to the massive downgrading of Commonwealth marine national parks in 2018 (Figure 10).

- Attainment of the standard was highest for shelf slope and larger ecosystems and in Queensland waters, which includes the Great Barrier Reef Marine Park (Figure 10).
- Of the jurisdictions, the NT has the lowest attainment of the standard, with no ecosystems protected to standard in strict protected areas (IUCN I-II) and 22 (41%) of 41 marine ecosystems having no protection at all (Figure 10).
- 115 (12.5%) of marine ecosystems lack any protection and 200 (22%) are under halfway to meeting the standard, with the largest components being smaller (<7904 hectares) ecosystems (60), shelf ecosystems (65) and ecosystems in Commonwealth waters (48) (Figure 10).
- When expressed by area of target rather than number of ecosystems, the situation appears relatively improved (Figure 11).
- Of a total target of 110 million hectares across all ecosystems to reach 15% standard with each ecosystem, 74% has been attained, up from just 16% in 2010. However, as noted above, only 22% of this is in marine national parks and this has declined from the 35% observed prior to the downgrading of 2018 (Figure 11).
- The gap of 16.9 million hectares in 2020 has been cut dramatically from the 81.8 million hectare gap estimated for 2010. Commonwealth waters still account for 14.54 million hectares of this gap, despite the massive expansion of marine parks in 2012 (Figure 11).



© artfirsov / Adobe

PROTECTION OF SPECIES AND ECOSYSTEMS OF NATIONAL SIGNIFICANCE

The Australian Government produces maps of known, likely-to-occur or may-occur distributions for threatened ecological communities (TECs) and species of national environmental significance (SNES) listed under the *Environment Protection and Biodiversity Conservation Act 1999*. Non-distributed distributional spatial data current at January 2021 was provided by the Environment Department and intersected with CAPAD 2010, 2016 and 2020.

A higher minimum protection standard of 30% of just known or likely habitats was adopted to recognise that these mapped current distributions are likely to be more restricted than original distributions prior to them becoming threatened.⁶² May-occur habitat is much more extensive than known or likely habitat, and represents mostly the outer envelope of the species or TEC range.⁶³ For this reason, it was excluded from the minimum standard.

The standard was not set any higher than 30% because even mapping of known or likely-to-occur habitats is still generally inexact. In some cases it misses known occupied habitat, while in others it inflates the actual distribution beyond the critical habitat for the species or TEC.⁶⁴

Attainment of the minimum standard for TECs was quite low and has improved little since 2010 (Figure 12). Only 13 of 84 TECs have met the standard. Two critically endangered TECs with small areas of known or likely-to-occur habitat have no protection of that habitat, unchanged since 2010,⁶⁵ while 49 TECs are under halfway to meeting the standard, slightly down from 50

62 As for the generic ecosystem standard, the standard was set to 100% if the total area of the distributions is less than 1000ha, and at 1000ha if 30% of the total distribution is less than that.

63 Metadata for *Australia - Species of National Environmental Significance Distributions (public grids)* at <https://www.environment.gov.au/fed/catalog/search/resource/details.page?uuid=%7B337B05B6-254E-47AD-A701-C55D9A0435EA%7D>

64 Gallagher, R.V. 2020. *National prioritisation of Australian plants affected by the 2019-2020 bushfire season – Report to the Commonwealth Department of Agriculture, Water and Environment*.

65 These two are *Hunter Valley Weeping Myall (Acacia pendula) Woodland*, with only 21 ha of known or likely habitat, and *Elderslie Banksia Scrub Forest* in the Sydney Basin Bioregion, with only 621 ha.

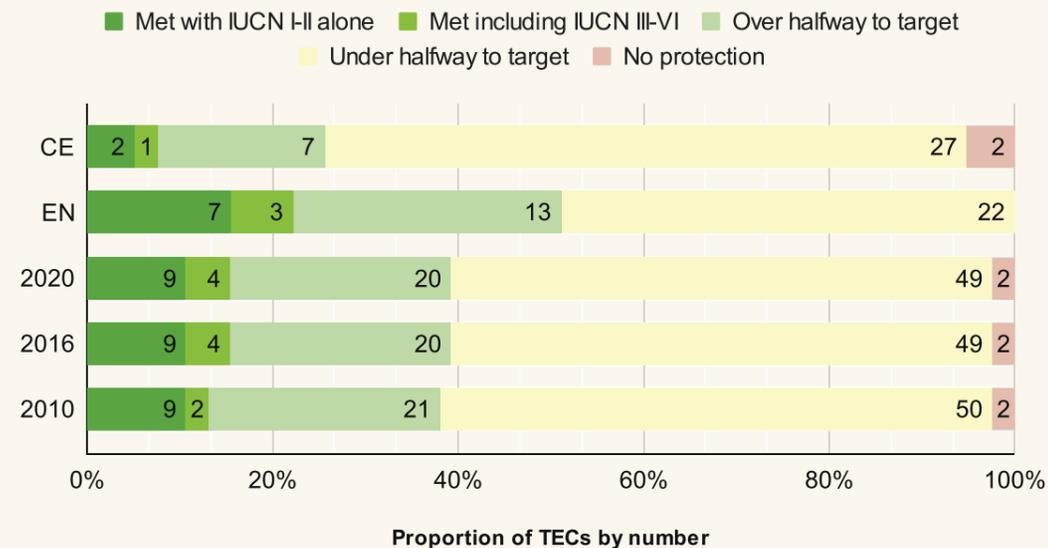


FIGURE 12.

Numbers of threatened ecological communities meeting 30% minimum protection standards by EPBC Act status (CE=critically endangered, EN=endangered), and by year.

in 2010 (Figure 12). Both TECs with no protection do, however, have may-occur habitats that intersect CAPAD 2020.

Critically endangered TECs are perversely much less well protected than endangered TECs, with only three reaching the standard compared to 10 endangered ecosystems (Figure 12). Two vulnerable TECs were excluded because they are not considered triggers for assessment under the relevant Act.

Note that for many TECs there is also may-occur habitat that falls within the protected area system, but this was not included in the minimum standard criteria. An additional TEC to those examined here, the critically endangered Warkworth Sands Woodland of the Hunter Valley, had only may-occur habitats mapped and so was excluded from analysis. However, none of its may-occur habitat overlapped with CAPAD 2020 either and so three critically endangered TECs lack protection, not just the two mentioned above.

Attainment of the 30% standard for species of national significance is somewhat higher than for TECs:

- Species meeting the standard have risen from 741 (38%) of 1,937 total species in 2010 to 833 (43%) by 2020, with the number actually slipping backwards from 841 since 2016 (Figure 13).
- 129 species lack any protection of known and likely-to-occur habitat, and a further 541 are below halfway to meeting the standard. The Northern Territory, Queensland and Western Australia, combined, accounted for 88 of the 129 species afforded no protection, and 107 of these species are terrestrial plants (Figure 13).
- Smaller distribution species (<5,081 hectares) were much more likely to have no or low protection, and many fewer met the standard (Figure 13).
- Mammals and birds, with 265 (72%) of 364 total species

meeting the standard, were the most well protected taxa, and invertebrates the least protected (14 of 66, or 21%) (Figure 14).

- Species in coastal and marine habitats (including migratory birds with very large ranges) were much better protected than terrestrial and freshwater species (Figure 14).
- Critically endangered species had the poorest protection, with only 66 (23%) of 289 species meeting the standard, which correlates highly with the fact they also tend to have the smallest remnant distributions (Figure 14).
- Of the total 129 species lacking protection, 94 are endangered, 42 of them critically. Ironically, these 42 critically endangered species should be the easiest to protect since all but seven are plants and all but two have distributions below 5,000 hectares (Figure 13).
- Of these 129 species lacking protection of known or likely-to-occur habitats, 90 also have may-occur habitat mapped. Of these, nearly half (43 of 90) also have some overlap of protected areas in 2020 with their may-occur habitat. In addition, there were another 569 species of national significance with only may-occur habitat mapped that were excluded from the analysis due to the impreciseness of mapping of such habitat.

In this analysis we do not attempt to model the protected area system that would be needed to bring all ecosystems and species up to minimum standards of adequate protection. This is beyond the scope of this study, but has been attempted in others. For example, to simultaneously bring all species and ecosystems to at least 17% protection is estimated to require 24% of Australia's land area in protected areas.⁶⁶

66 Polak, T., et al. 2016. Balancing ecosystem and threatened species representation in protected areas and implications for nations achieving global conservation goals. *Conservation Letters*, 9, 438-445.

FIGURE 13.

Figure 13. Numbers of species of national significance sampled in protected areas to a minimum 30% standard, by jurisdiction, range size and time.

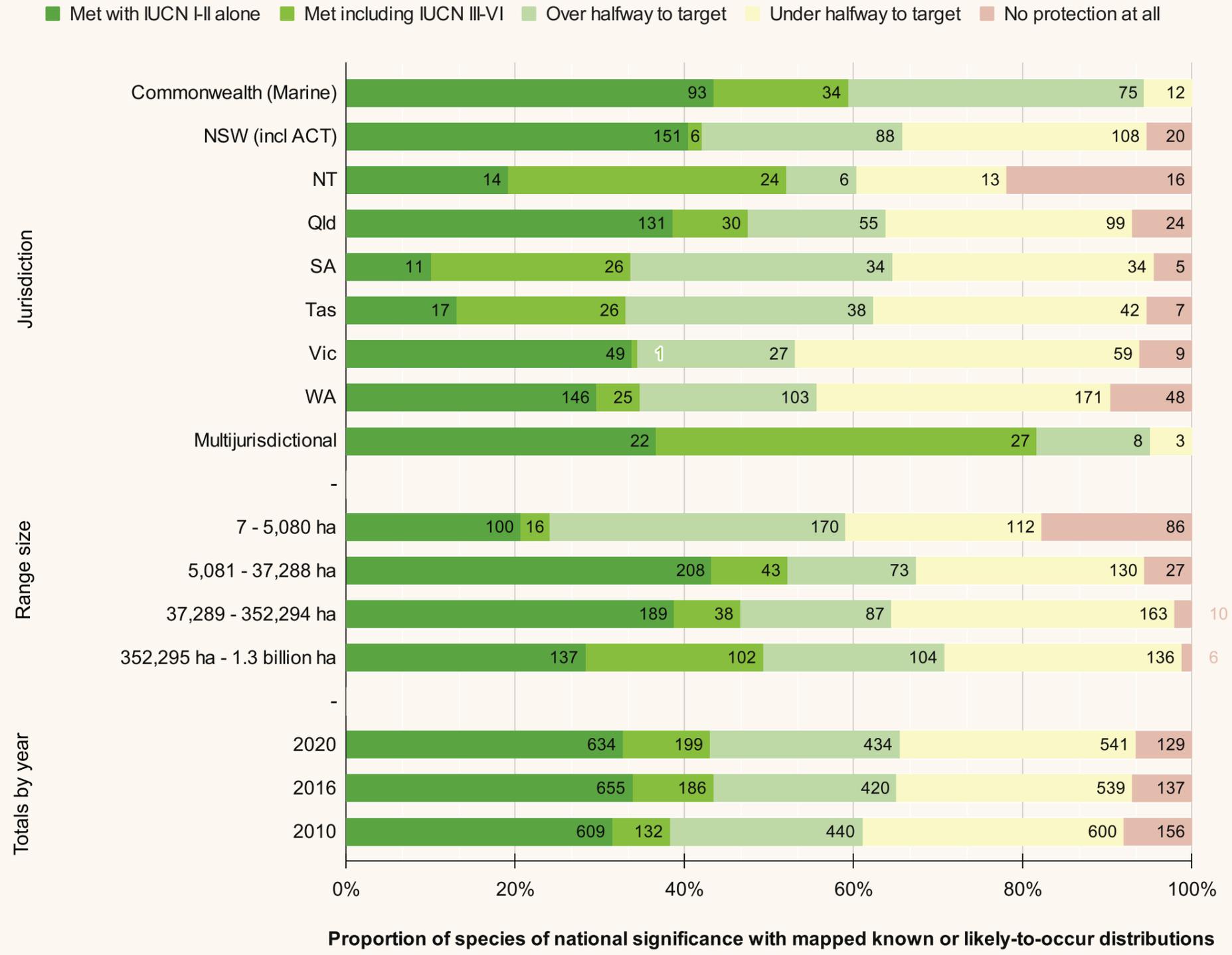
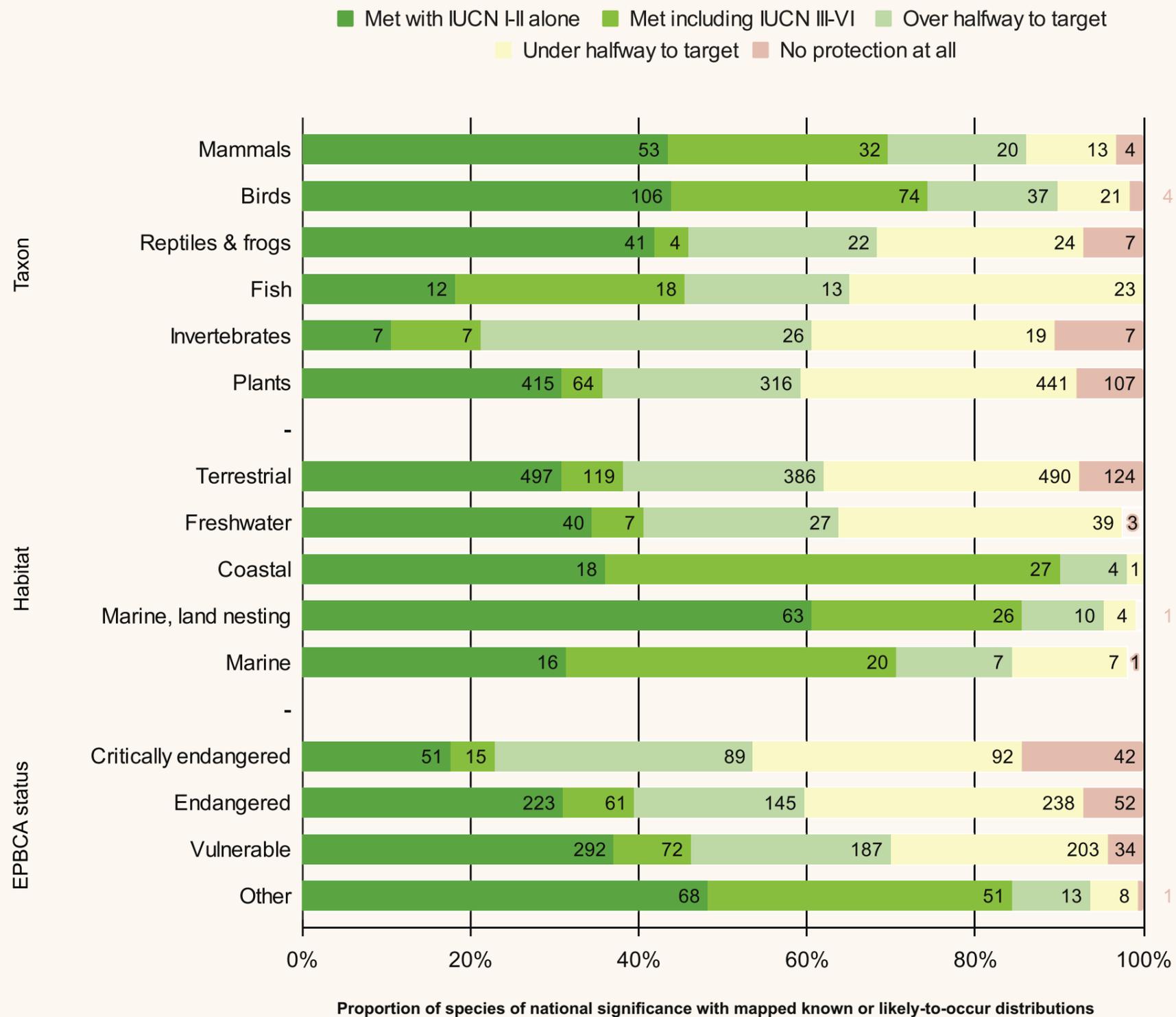


FIGURE 14.

Figure 14. Numbers of species of national significance sampled in protected areas in 2020 to a minimum 30% standard, by taxon, habitat and EPBC Act status (“Other” includes cetaceans, migratory or marine listed species not otherwise listed as threatened).



PROTECTION OF “INLAND WATERS”

PROTECTION OF “INLAND WATERS”

Aichi Target 11 also aimed to protect at least 17% of inland waters, and at least 10% of each associated ecoregion, which are interpreted here to mean river catchments.

Of 191 catchments, 44 (23%) are below 10% of inland waters and wetlands protected within each catchment (Figure 15).

These calculations are not based on the land areas of entire catchments. Rather, the minimum 10% target applies only to the approximate area of streams, lakes and wetlands within catchments that fell within protected areas. All linear watercourses were converted to area equivalents by one hectare pixels that overlapped watercourse lines, while lakes and wetlands were likewise converted to one hectare pixels. These conversions are imprecise and therefore can only provide an indicative picture. For streams, area becomes a proxy for stream length.

Catchments reaching the 10% threshold due to expansion of national parks and strict protected areas went backwards from 93 of 191 in 2010 to 89 in 2016 (Figure 15). Although the catchments reaching 10% due to all protected areas went up from 139 to 149 from 2010 to 2016, it then went backwards from 149 (78%) in 2016 to 147 catchments in 2020, due to

revocation of two large nature refuges (mostly IUCN VI in Queensland) in two catchments on Cape York in 2016 and 2018, respectively (Figure 15).⁶⁷

Strict protection is little improved from a decade ago, when only 7.9% of the length of major rivers and streams was found to fall inside IUCN I-IV protected areas.⁶⁸

Nonetheless, a higher proportion of catchments has reached the 10% minimum protection target than have bioregions (compare Figures 5 and 15).

⁶⁷ Strathburn Cattle Station and Astrea nature refuges.

⁶⁸ Stein, J. and Nevill, J. 2011. Counting Australia's protected rivers. *Ecological Management and Restoration*, 12, 200-206.

FIGURE 15.

Figure 15. Catchments meeting the 10% protection target for inland waters over the 2010-20 decade.

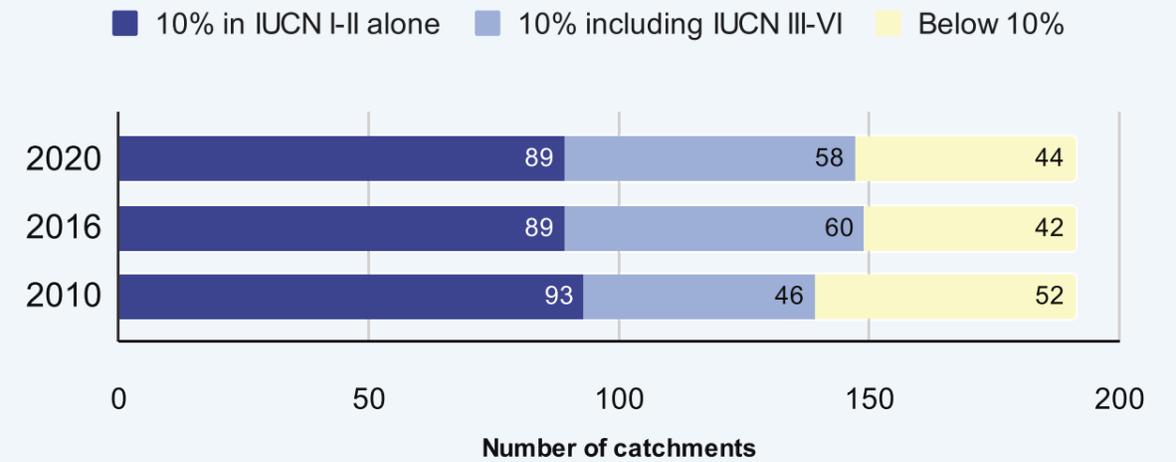
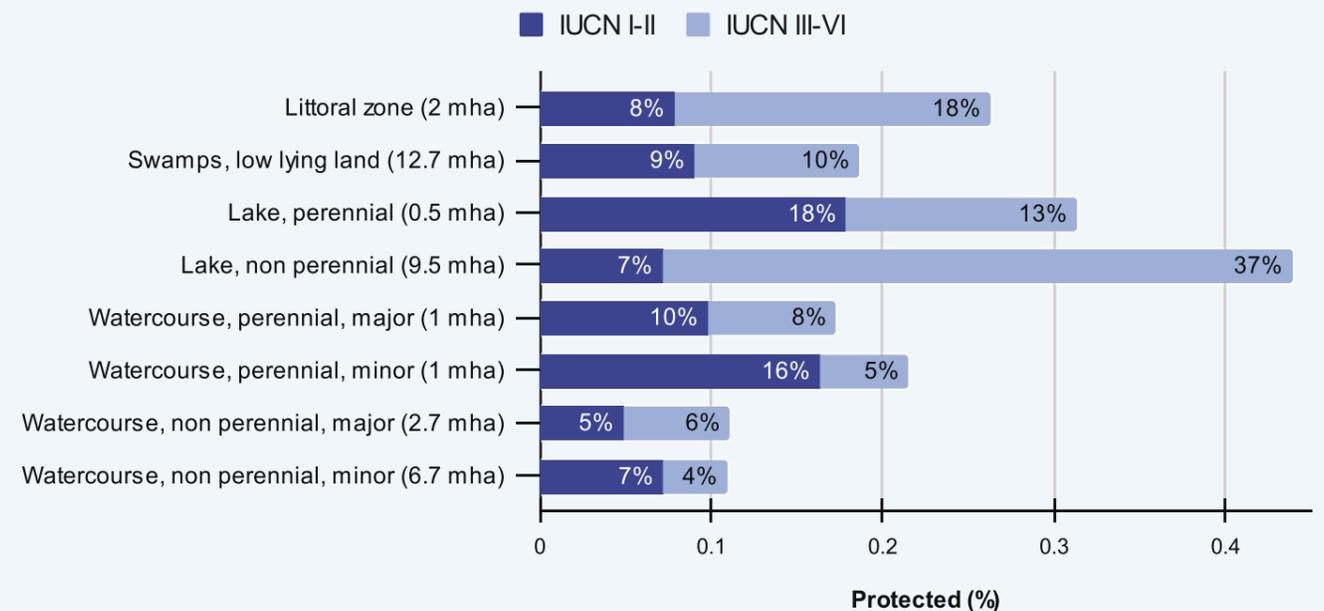


FIGURE 16.

Figure 16. Protection of broad types of inland waters and wetlands in 2020.



PROTECTION OF “INLAND WATERS”

Inland waters and wetlands vary greatly in the levels of protection by type. Non-perennial watercourses are more extensive and much less protected than perennial watercourses, while non-perennial inland lakes are both extensive (at 9.5 million hectares) and enjoy the highest levels of protection (Figure 16). This is largely due to the extensive Indigenous Protected Areas in the arid and semi-arid zones (see below).

This analysis only captures high-level ecological representation. An interim framework for classifying and mapping Australian Aquatic Ecosystems has been developed, but is only mapped for the Murray Darling Basin, so that ecosystem level representation cannot yet be assessed for the entire country.⁶⁹

New terrestrial protected areas are often pursued without regard for the specific ecological needs of the freshwater habitats they contain, and rarely are entire subcatchments protected.⁷⁰

Rivers and streams inside protected areas also remain highly susceptible to habitat degradation due to pollution, pest species and disruptions to natural environmental flows resulting from land degradation and dams in unprotected parts of the same catchment. The effectiveness of freshwater protected areas depends strongly on the complementarity of catchment-wide regulation of land and water uses, and the maintenance of stream connectivity. In the absence of mitigations such as fish ladders,⁷¹ connectivity is destroyed by dams.

The conservation of environmental flows is particularly important for building the resilience of freshwater ecosystems to climate change.⁷² The conservation of environmental flows in the Murray Darling Basin through buy-backs of water rights is the aquatic equivalent to purchasing land to include in the parks estate and should be considered an essential element of investment in strategic protected area growth.⁷³

⁶⁹ Australian Government. 2020. *Aquatic Ecosystems Toolkit Module 2: Interim Australian National Aquatic Ecosystem (ANAE) Classification Framework*. Webpage (<https://www.environment.gov.au/resource/aquatic-ecosystems-toolkit-module-2-interim-australian-national-aquatic-ecosystem-anae>)

⁷⁰ Juffe-Bignoli, D., et al. 2016. Achieving Aichi Biodiversity Target 11 to improve the performance of protected areas and conserve freshwater biodiversity. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 26, 133-151.

⁷¹ Chessman, B.C. 2013. Do protected areas benefit freshwater species? A broad-scale assessment for fish in Australia's Murray–Darling Basin. *Journal of Applied Ecology*, 50, 969-976.

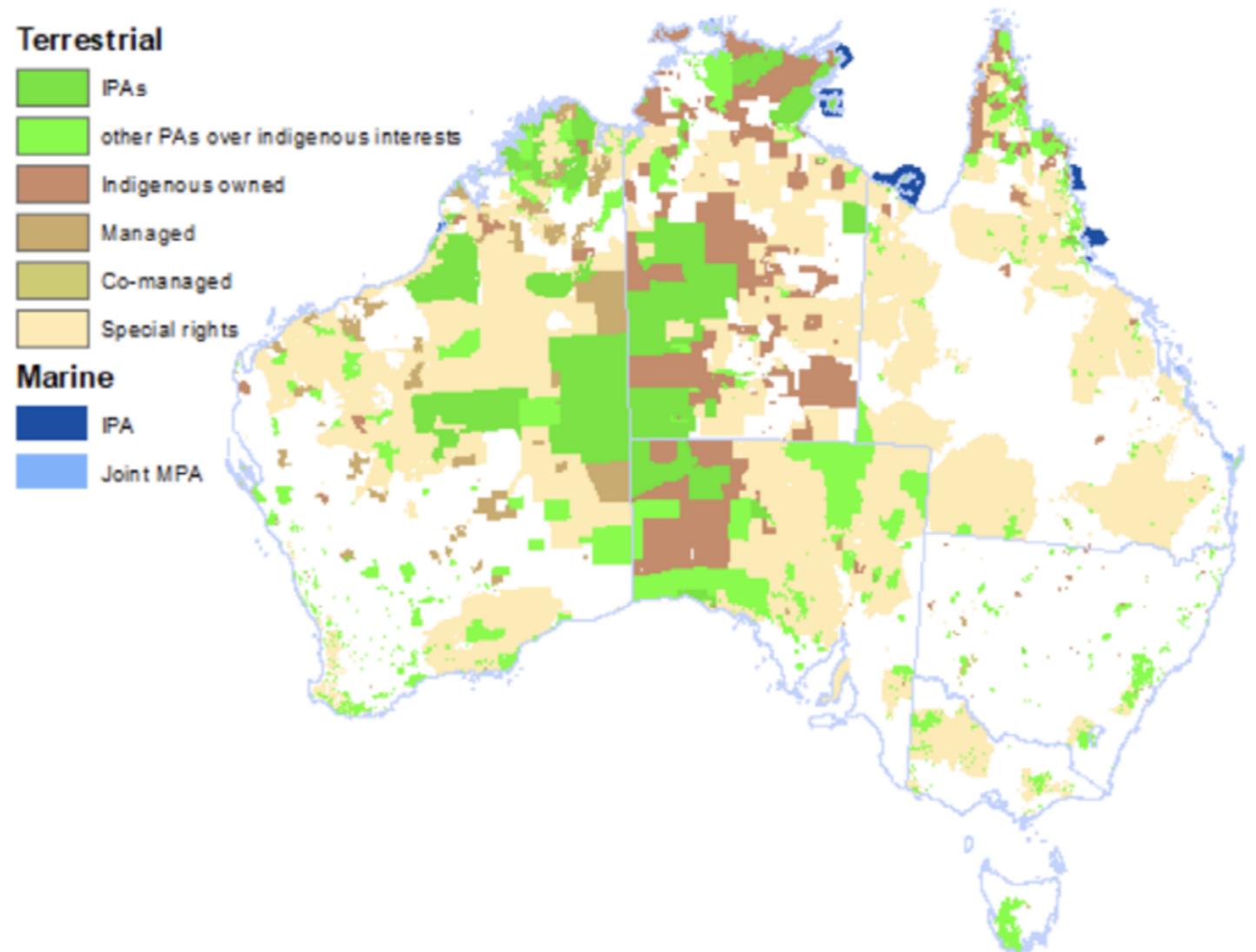
⁷² Pittock, J. and Finlayson, C.M. 2011. Australia's Murray–Darling Basin: freshwater ecosystem conservation options in an era of climate change. *Marine and Freshwater Research*, 62, 232-243.

⁷³ Australian Government. 2020. *Environmental water holdings*. Webpage (<https://www.environment.gov.au/water/cewo/about/water-holdings>)

FIGURE 17.

Figure 17. Australian Indigenous Protected Areas, jointly managed marine protected areas and the Indigenous terrestrial estate.⁷⁴

⁷⁴ Sources: CAPAD 2020 for protected areas, and ABARES *Indigenous Forest Tenure 2020* for the Indigenous estate spatial data, including non-forest areas.



“EQUITABLE”: INDIGENOUS PROTECTION OF NATURE

Aichi Target 11 stipulated that the protected area system be “equitable” as well as ecologically representative, that is “with the full participation of indigenous and local communities, and such that costs and benefits of the areas are fairly shared”.⁷⁵

The rapid growth of Indigenous sole and jointly managed protected areas over the 2010-20 decade suggests that equity of management has increased, but also raises two major issues.

Firstly, government under-investment in Indigenous Protected Areas (IPAs) and reliance on short-term contracts does not provide long-term financial security for Indigenous managers, and imposes an administrative burden of continually chasing short-term grants.⁷⁶

IPAs represent a voluntary commitment by Indigenous land managers to manage their country for the conservation of nature and culture to meet Australian Government objectives and treaty commitments. The Australian Government IPA program funds the development of an IPA management plan and its implementation. This contrasts with Commonwealth national parks that are Indigenous owned, established under statute with a long-term, lease-back arrangement and co-managed with Parks Australia.

IPAs can overlay many tenures, including government reserves, and so more faithfully reflect the Indigenous concept of “Country” that predates the imposition of European tenure systems.⁷⁷

The Australian Government, however, offers only short-term grants to establish and manage IPAs, and

invests in IPAs at a much lower level per hectare than other protected areas. The Australian Government in 2012 was investing, on average, just \$0.27/ha to establish IPAs and \$1.32/ha in annual management costs through Working on Country grants (which do not necessarily fund rangers only on IPAs). In contrast, the National Reserve System grants program was spending \$44.40/ha just on the acquisition of new protected areas, while annual management of Commonwealth national parks was estimated at \$28.59/ha.⁷⁸

Secondly, the increasing reliance on Indigenous communities to shoulder the burden of building the national protected area system raises the question of the present and possible future capacity of Indigenous lands to meet Australian Government CBD commitments (Figures 4, 17).

Indigenous lands in Australia, Brazil and Canada have higher vertebrate species richness and threatened species than other protected areas.⁷⁹

However, because Indigenous lands tend to be located in the more remote and arid centre, north and west of the country, their capacity for contributing to ecological representation at a national scale is necessarily constrained.

Nearly half, 58 of 85 terrestrial bioregions (excluding four oceanic and subantarctic bioregions), reached 10% solely by counting IPAs and protected areas underlain by Indigenous interests (i.e. owned, sole or co-managed or with special Indigenous rights) (Figure 18). In addition, a further 21 bioregions could have reached the minimum 10% target if Indigenous rights holders had been willing to protect appropriate areas (Figure 18).

Only six of the 85 bioregions could not meet the minimum 10% protection on Indigenous lands.

Indigenous interest lands are yet more constrained in meeting minimum standards for protection for finer-scaled ecosystems, threatened ecological communities (TECs) and species of national significance (SNES).

Indigenous Protected Areas and protected areas with Indigenous interests account for only 18% of ecosystems, 11% of TECs and 22% of SNES meeting their respective 15% and 30% protection standards (Figure 18).

If the appropriate areas of land with Indigenous interests were also voluntarily protected, a further 31% of ecosystems, 17% of TECs and 13% of SNES could attain minimum standards.

However, 7% of bioregions, 41% of ecosystems, 66% of TECs and 46% of SNES would not be able to meet targets and standards on Indigenous interest lands as currently distributed (Figure 18).

Indigenous interests are, however, expanding and this could change in future as more native title claims are determined. Although native title is extinguished on freehold land, Traditional Owners can and have purchased freehold land for protection, including using former National Reserve System Program grants.

Marine protected areas, although dominated by government management, have increasing levels of Indigenous management as well (Figure 17).⁸⁰ Eight different Indigenous Protected Areas (IPAs) now account for four million hectares of marine protection, and half of this area overlaps government protected areas. Of these eight, only one (Dhimurru) existed in 2010.

75 <https://www.cbd.int/doc/strategic-plan/targets/T11-quick-guide-en.pdf>

76 Australian National Audit Office. 2011. *Indigenous Protected Areas*. Auditor-General's report No.14 of 2011–12. Several Indigenous Protected Area managers pers. comm.

77 Smyth, D. 2015. Indigenous protected areas and ICCAs: commonalities, contrasts and confusions. *Parks*, 21.2, 73–84.

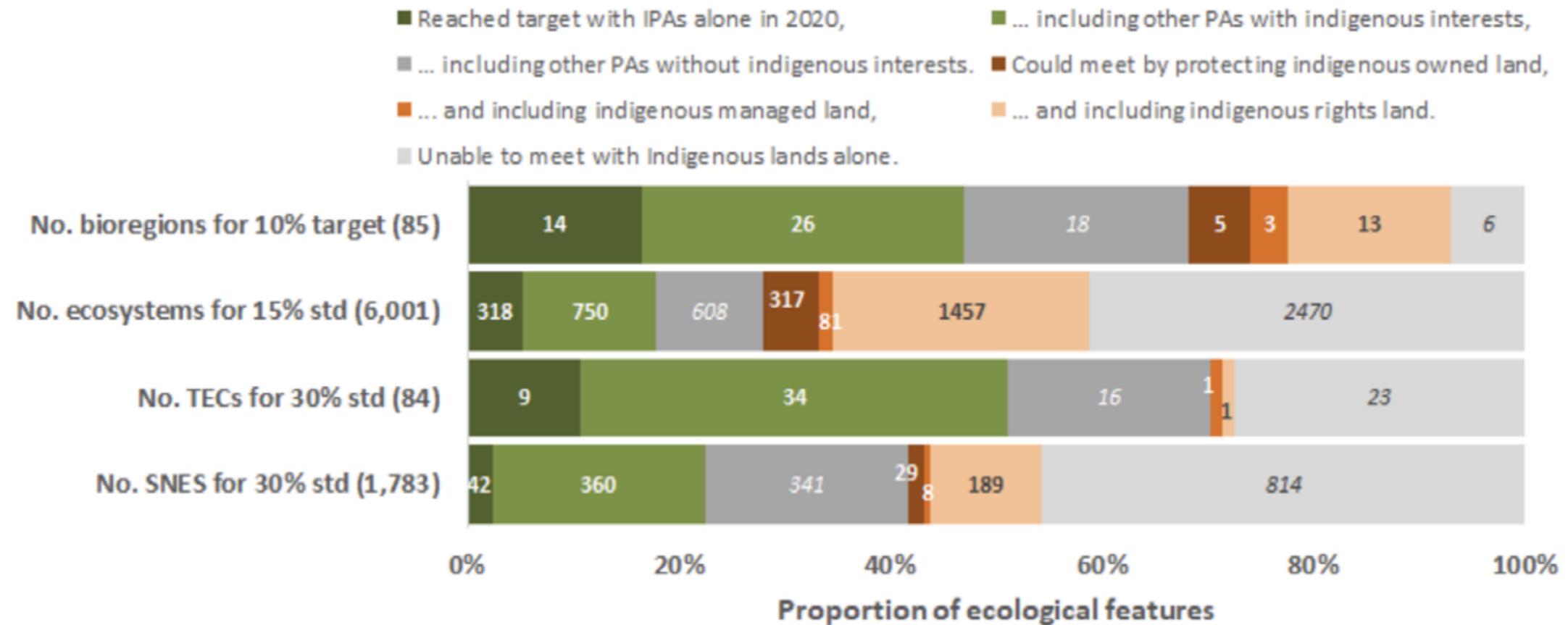
78 Tables 2-3 in Taylor, M.F.J., et al. 2014. *Building Nature's Safety Net*. Cited above.

79 Schuster, R., et al. 2019. Vertebrate biodiversity on indigenous-managed lands in Australia, Brazil, and Canada equals that in protected areas. *Environmental Science and Policy* 101:1-6. doi: <https://doi.org/10.1101/321935>

80 Rist, P., et al. 2019. Indigenous protected areas in Sea Country: Indigenous-driven collaborative marine protected areas in Australia. *Aquatic Conservation: Marine and Freshwater Ecosystems* 29: 138–151.

FIGURE 18.

Figure 18. Numbers of terrestrial bioregions, ecosystems, threatened ecological communities (TECs) and species of national significance (SNES) meeting respective standards with Indigenous associated protected areas with and without Indigenous interests and numbers that could reach the standard in future on lands Indigenous owned or managed, or with special Indigenous rights, if Indigenous custodians were willing to protect appropriate areas of their country (see Figure 17).



“WELL-CONNECTED” AND “INTEGRATED INTO THE WIDER LANDSCAPE AND SEASCAPE”

The ability of protected areas to effectively conserve nature may be restricted by the extent to which they are small and isolated within a matrix of uses that degrade or destroy habitats. As noted above, this is of particular concern for protection of inland waters.

Species unable to shift ranges in response to climate change, due to a lack of connectivity, are at higher risk of local extinction.⁸¹

Recent global analysis shows that less than 10% of terrestrial protected areas globally are connected by relatively intact habitats. Although higher than the global average, the ~17% connectivity estimated for Australian protected areas in that analysis is still very low.⁸²

The Australian Government developed a National Wildlife Corridors Plan for terrestrial environments in 2012 but no direct funding has been provided to implement it.⁸³

81 May, S. 2017. *Enhancing Landscape Connectivity*. National Parks Australia Council report; Worboys, G.L. and Pulsford, I. 2011. *Connectivity conservation in Australian landscapes*. Report prepared for the Australian Government Department of Sustainability, Environment, Water, Population and Communities.

82 Ward, M.S., et al. 2020. Only ten percent of the global terrestrial protected area network is connected via intact land. *BioRxiv* (<https://doi.org/10.1101/2020.01.28.920488>).

83 Burke, T. 2012. *National Wildlife Corridors Plan released*. Australian Government media release.



© Adobe / Lukas



Restoring connectivity: Angela and Mark McCaffrey, of Trees for the Atherton and Evelyn Tablelands (TREAT), and their rainforest replanting project and possum bridge on South Endeavour Trust's Lemuroid Leap Nature Refuge, North Queensland, 2019. © Martin Taylor

BOX 1. CRITICAL HABITATS: PRIORITIES FOR PROTECTION

Critical habitat is the habitat needed by a threatened species to be able to recover to the point whereby it is no longer threatened.

That includes habitats where the species does not presently occur but which it will need to move into as populations expand during recovery,⁸⁴ including habitats in a climate-shifted future.⁸⁵

Under Australia's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), critical habitats for threatened species are required to be identified in recovery plans, along with the actions needed to protect them.

However, recovery plans are not mandatory, many have expired or are unfunded, and only a fraction of species possess them. Of the 120 most endangered animals with recovery plans, 86 identified the importance of protecting critical habitat, but only 12 identified measures to prevent loss of critical habitat, and none had specific funding for new protected areas to save critical habitats.⁸⁶

Although the EPBC Act provides for listing critical habitats on a register, doing so is not mandatory, and these habitats are protected against harm only on Commonwealth land or sea. There are only five registered, and no new registrations have occurred since 2005.⁸⁷

The 2009 National Reserve System strategy has a 2030 target to:

“Include critical habitats and core areas important for the long-term survival of rare, migratory, threatened or other priority species and ecological communities, including those listed under Commonwealth, state or territory legislation in each IBRA bioregion.”⁸⁸

However, critical habitats are poorly characterised, maps are lacking, and legal protection almost non-existent.

If critical habitats were better characterised, we would be better able to identify new Key Biodiversity Areas, climate refugia and corridors that serve many species in the context of a warming climate.

It is likely that much larger areas of habitat will be critical for the persistence of wild populations given rising levels of habitat disturbance from fire, storm and drought, and habitat shifting under climate change.

Mapping and protecting critical habitats for threatened species, through vigorous application of the EPBC Act, and the incentivisation of covenants and land purchases for protection, should be a national conservation priority.

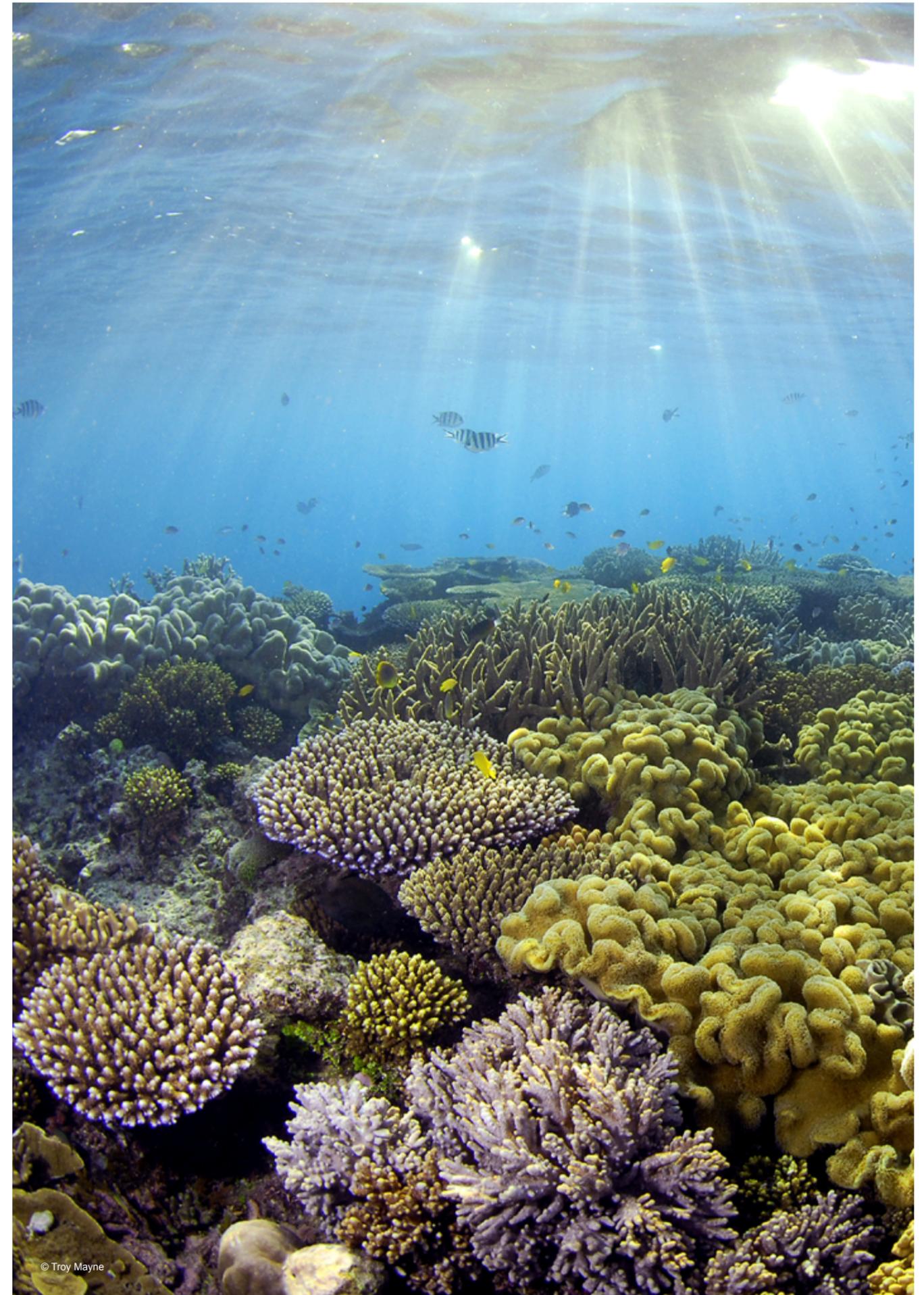
⁸⁴ For example, see the definition under the US Endangered Species Act sect 5(A) “(i) the specific areas within the geographical area occupied by the species ... on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species ... upon a determination by the Secretary that such areas are essential for the conservation of the species”.

⁸⁵ Reside, A.E., et al. 2013. *Climate change refugia for terrestrial biodiversity* Maggini, R., et al. 2013. *Protecting and restoring habitat to help Australia's threatened species adapt to climate change*. National Climate Change Adaptation Research Facility reports, Gold Coast, Queensland.

⁸⁶ Australian Conservation Foundation, Environmental Justice Australia and Birdlife Australia. 2015. *Recovery planning: Restoring life to our threatened species*. Report (<https://www.birdlife.org.au/documents/OTHPUB-Recovery-Planning-Report.pdf>)

⁸⁷ <https://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl>

⁸⁸ <https://www.environment.gov.au/land/nrs/publications/strategy-national-reserve-system>



© Troy Mayne

FIGURE 19.

Figure 19. Bioregions meeting the 30% by 2030 target, over or under halfway there in 2020.

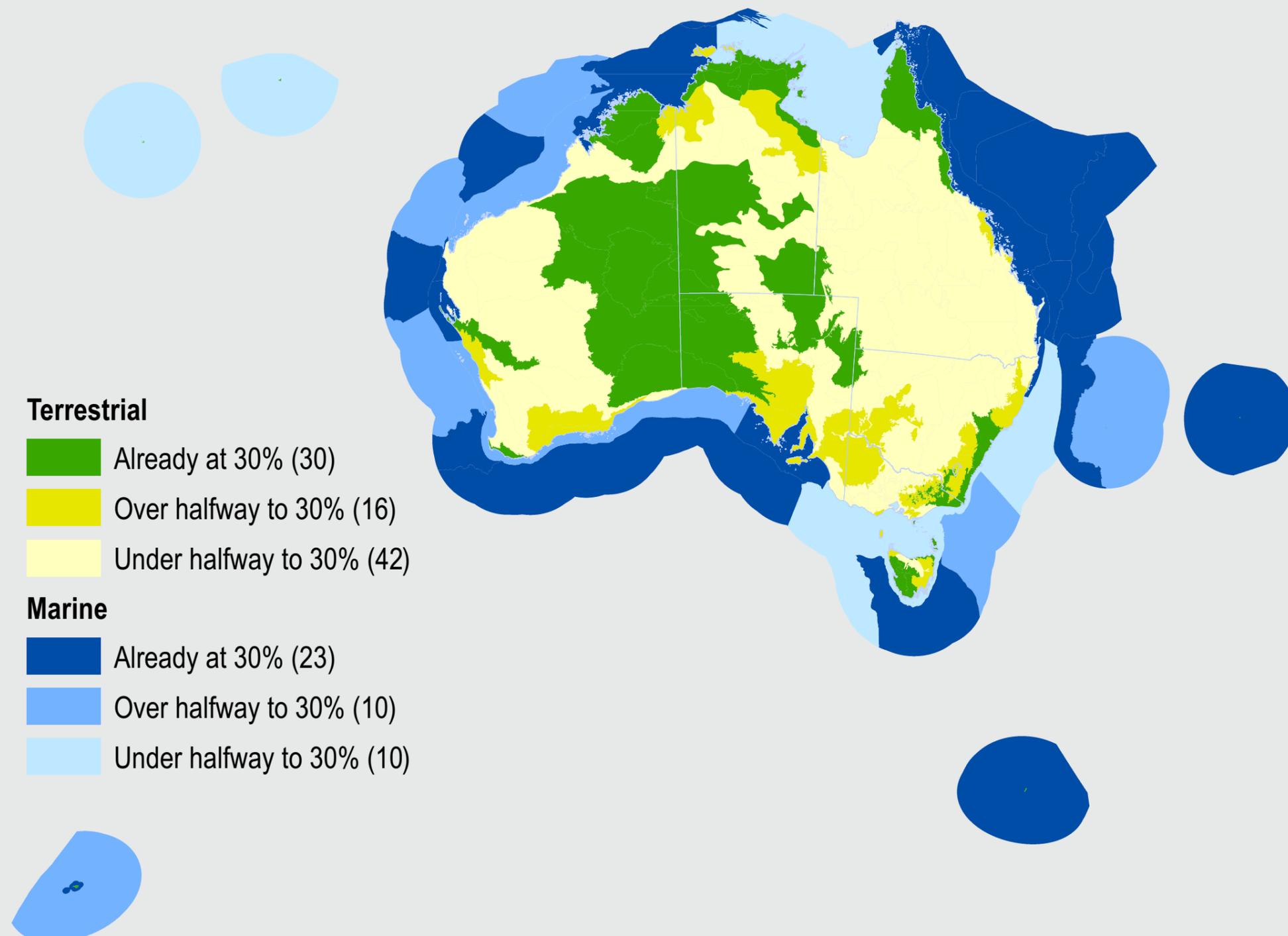
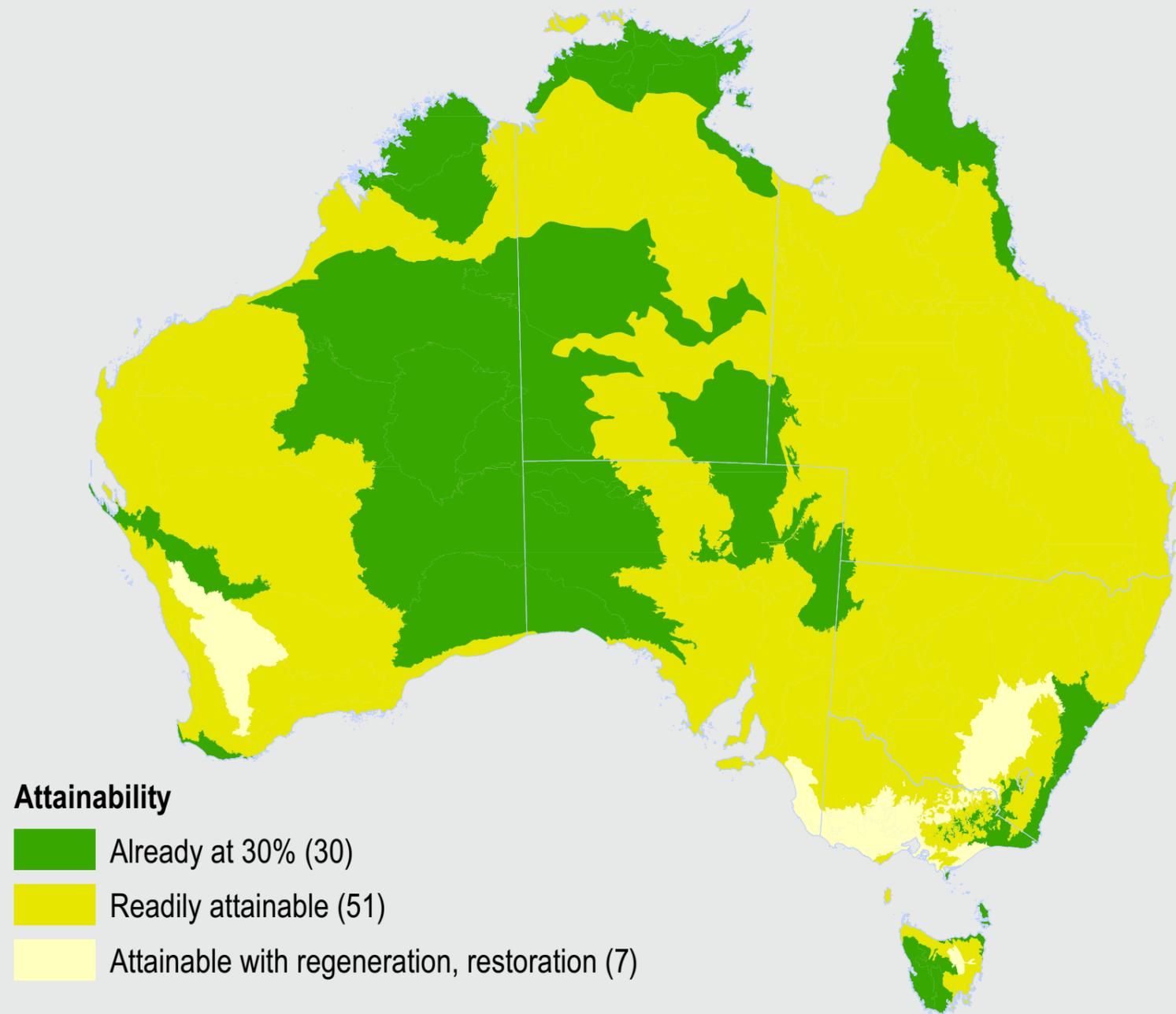


FIGURE 20.

Figure 20. Attainability of the 30% protection by 2030 target in terrestrial bioregions.



THE PROMISE OF 2030

CONVENTION ON BIOLOGICAL DIVERSITY DRAFT 2030 TARGETS

At time of writing new protected area targets had yet to be adopted by parties to the Convention on Biological Diversity for the decade 2021-2030. The draft Target 3 states:

“By 2030, protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least 30 per cent of the planet with the focus on areas particularly important for biodiversity and its contributions to people, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.”⁸⁹*

Protecting at least 30% of every bioregion effectively and equitably to meet the ecologically representative target will help forestall the extinction and climate crises, and contribute greatly to sustainable development.⁹⁰

However, Australia has much to do on land and sea to reach this target over the next decade :

- 58 of 88 terrestrial bioregions are below 30% protected, of which 42 are under the halfway to target, with a total gap of 106.5 million hectares yet to be protected (Figure 19); and
- 20 of 43 marine bioregions are below the 30% target, with a total gap of 68 million ha yet to be protected to reach the target in all bioregions (Figure 19).

These numbers may be underestimated, considering that “protected areas” that allow commercial natural resource extraction may not be meeting the accepted IUCN definition of protected area or management guidelines. In our 2014 Safety Net report we did a comprehensive analysis and found that 137 million ha of new marine national parks would be needed to simultaneously meet species and ecosystem minimum protection standards as above, as well as to bring each marine bioregion to at least 17% protection in marine national parks, at an estimated cost of \$264m for fisheries structural adjustment. The increased area of national parks would come from declaring new marine parks but also by upgrading existing exploited marine park zones to marine national parks. This figure is likely to be much greater now since large areas of marine national parks were downgraded in 2018.

⁸⁹ <https://www.cbd.int/article/draft-1-global-biodiversity-framework>

⁹⁰ Dinerstein, E., *et al.* 2019. A global deal for nature: guiding principles, milestones, and targets. *Science Advances*, 5(4), p.eaaw2869.

Reaching the bioregional 30% target may take 68 million ha of new marine protected areas of all types, but over 137 million ha of new marine national parks including upgrades would be required to most effectively meet bioregional, species and ecosystem targets simultaneously.

In filling bioregional gaps, priority must go to reaching minimum protection standards for all ecosystems and threatened species, climate change refugia and corridors, Key Biodiversity Areas and freshwater habitats.⁹¹

Species and ecosystem-level protection standards can be achieved simultaneously in Australia quite efficiently.⁹²

Nonetheless, in some highly developed bioregions, it will not be easy to achieve the promise of 30% protection, because insufficient intact habitats remain. We examined the attainability of the 30% target and found that it would require natural regeneration of cleared lands, or active restoration of cultivated farmlands in seven bioregions, mostly through the wheat-sheep belt, including the Avon Wheatbelt (WA), Naracoorte Coastal Plain (SA), NSW South Western Slopes, South East Coastal Plain (Vic), Southern Volcanic Plain (Vic), Tasmanian Northern Midlands and the Victorian Midlands (Figure 20).

To reach 30% protected of each of these seven bioregions, 1.7 million hectares of mostly cleared grazing land would need to be allowed to naturally regenerate, and 2.3 million hectares of cultivated lands would need to be taken out of production and actively restored. This would likely be costly and challenging, with a substantial opportunity cost of foregone agricultural production to be addressed.

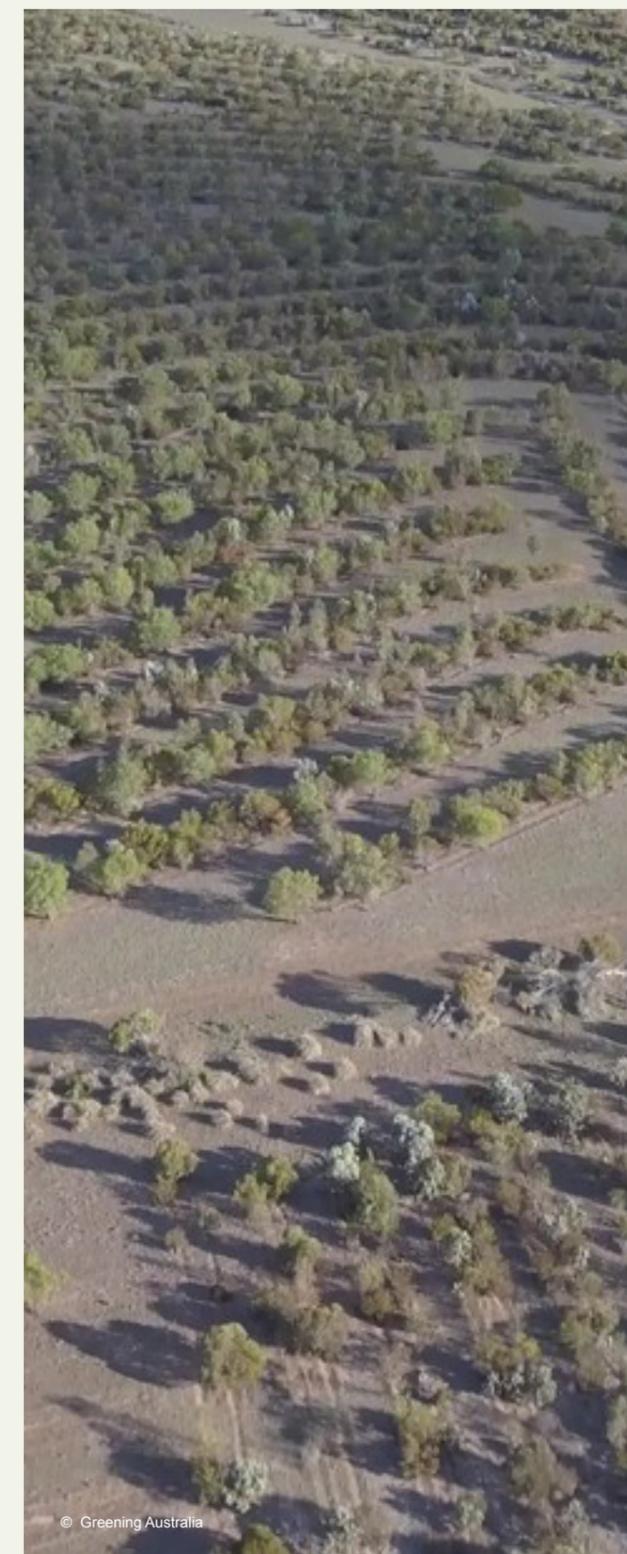
Nonetheless, these are only high-level estimates for meeting bioregional targets. To reach minimum standards for ecosystems, threatened ecological communities and species is also likely to require significant habitat restoration and regeneration if extinctions are to be prevented.

The United Nations named 2021-2030 the Decade of Restoration.⁹³ Australia should not only stop the loss of biodiversity, but reverse it through ecosystem restoration and rewilding. With sufficient investment in restoration and regeneration, Australia could meet the promise of 2030 in every bioregion.

⁹¹ Juffe-Bignoli, D., *et al.* 2016. Achieving Aichi Biodiversity Target 11 to improve the performance of protected areas and conserve freshwater biodiversity. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 26, 133-151. Butchart, S., *et al.* 2016. Monitoring protected area coverage and impact on key biodiversity areas, important bird areas and alliance for zero extinction sites. In: *Protected Areas: Are They Safeguarding Biodiversity?*, (eds Joppa, L.N., *et al.*), pp. 209-227, Wiley.

⁹² Polak, T., *et al.* 2015. Efficient expansion of global protected areas requires simultaneous planning for species and ecosystems. *Royal Society Open Science*, 2(4), p.150107.

⁹³ <https://www.decadeonrestoration.org/>



© Greening Australia

BOX 2: PROTECTED AREAS IN AUSTRALIA'S STRATEGY FOR NATURE

Objective 2: Empower Australians to be active stewards of nature progress measure:

*2C Number and extent of lands managed for conservation under other effective conservation measures (**privately managed protected areas**, covenants or stewardship agreements)*

Objective 4: Respect and maintain traditional ecological knowledge and stewardship of nature with progress measure:

*4D Number and extent of terrestrial and marine areas managed by **Indigenous Protected Areas (IPAs)** or other co-management arrangements*

Objective 5: Improve conservation management of Australia's landscapes, waterways, wetlands and seascapes with progress measures:

*5A Extent and representativeness of **government-managed reserve estate** and, where available, its condition.*

*5B Extent and representativeness of **marine protected areas**, including marine Indigenous Protected Areas*

*5C Number and extent of significant **ecosystems protected by private landowners** through stewardship or other arrangements*

*5D Explicit consideration of future climate scenarios in the planning and management of **protected area networks***

*5E **Retention, protection** and/or restoration of wetland systems to maintain or improve ecological integrity and ecosystem function*

Objective 6 Maximise the number of species secured in nature with progress measures:

*6B Number of populations of threatened or near-threatened species protected in **government-managed reserves***

*6C Number of populations of threatened or near-threatened **species protected by private landowners** through stewardship or other arrangements*

Objective 7: Reduce threats and risks to nature and build resilience with progress measures:

*7E **Retention, protection** and/or restoration of landscape-scale, native vegetation corridors*

*7F **Retention, protection** and/or restoration of native vegetation in urban, peri-urban and agricultural contexts*



Swift parrot © Adobe / SalenayaAlena

AUSTRALIA'S STRATEGY FOR NATURE 2019-30

Prior to adopting CBD targets for 2030, Commonwealth, state and territory governments in 2019 agreed on a National Biodiversity Strategy ("the Strategy") for the coming decade (2019-2030), which incorporates (by reference) the 2030 National Reserve System strategy.⁹⁴

Although the Strategy ties Aichi Target 11 only to Goal 5, investing in the strategic growth of the National Reserve System would deliver on at least five different goals and 11 different progress measures (Box 2). There are significant gaps in representativeness (progress measures 5A-C, Figures 5, 11, 12) and protection of species habitats (progress measures 6B,C, Figures 8-9) identified above.

The Strategy unfortunately does not recognise the National Reserve System as a singular system and multi-tenure success story, composed of not only government reserves but also Indigenous, non-government and private protected areas.

Like its earlier draft, the Strategy did not have measurable and specific targets and milestones, nor dedicated funding.⁹⁵ It did not anticipate or provide for the reality that Aichi targets will be replaced with new targets for the coming decade, and it was not a "living document" that ensures revisions to "meet changing national and international priorities."⁹⁶

UNDER-INVESTMENT IN AUSTRALIA'S PROTECTED AREA GROWTH

Currently, the only national protected areas funding program is the \$15 million Indigenous Protected Areas Program (IPAP), a tiny sub-program of the \$1 billion National Landcare Program (formerly Natural Heritage Trust or Caring for Our Country).⁹⁷

94 Australia's Strategy for Nature 2019-2030, Commonwealth of Australia, 2019. https://naturehub.govcms.gov.au/sites/default/files/2019-11/Australia_s_Strategy_for_Nature_%20web.pdf

95 Richie, E., et al. 2018. Australia's draft 'Strategy for nature' doesn't cut it. Here are nine ways to fix it. The Conversation, 2018. <https://theconversation.com/australias-draft-strategy-for-nature-doesnt-cut-it-here-are-nine-ways-to-fix-it-92345>

96 Page 34, Australia's Strategy for Nature 2019-2030, Commonwealth of Australia, 2019.

97 <http://www.nrm.gov.au/national/continuing-investment/indigenous-protected-areas>

Even if all Indigenous communities volunteered for protected areas over their country it would never be sufficient to meet either the 2020 or 2030 target in regard to ecological representation (Figure 18) due to the limited size of the Indigenous-owned footprint as discussed above.

Indigenous communities should not be burdened with primary responsibility for delivering Australia's international biodiversity commitments, which *Australia's Strategy for Nature* recognises as a shared responsibility.

The former National Reserve System program was a highly cost-effective program, costing only ~\$44 per hectare to purchase land, on average, but leveraging six dollars from state partners for every dollar invested by the Federal Government, taking into account the permanent commitment by state agencies to conservation management.⁹⁸

The National Reserve System program provided the Australian Government with critical leadership and leveraging power to drive major expansion of protected areas in priority bioregions.

Before its termination in 2012-13 the program also helped Traditional Owners buy back land to protect it, such as Fish River in the NT, Mawonga in NSW, Talaroo Station in Queensland and several properties on Cape York. In addition, many pastoral leases in WA purchased by the state with grants from the former NRS program have been handed back to Traditional Owners with exclusive possession native title. Traditional Owners have yet to decide on their plans for protection of many of these areas.⁹⁹

98 Taylor, M.F.J., et al. 2014. *Building Nature's Safety Net 2014: A decade of protected area achievements in Australia*. WWF-Australia.

99 WA parks staff pers.comm.

BOX 3: SAVING NIGHT PARROT HABITAT

One of the most spectacular protected area additions of the 2011-20 decade was Bush Heritage Australia's purchase of the 56,000-hectare Pullen Pullen Reserve in western Queensland, after the rediscovery of the endangered night parrot there in 2013.

The night parrot is a species of national environmental significance, listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.¹⁰⁰ The official conservation advice to the Federal Environment Minister is "to secure the only known extant population by eliminating or minimising key local threats".¹⁰¹ Threats include exotic livestock, cats, foxes, excessive fire, and barbed-wire fencing that entraps these night-flying birds. All threats are abated by conversion to livestock-free protected areas.

Bush Heritage Australia was only able to purchase Pullen Pullen through the support of generous donors and by going into debt.

Despite the national importance of the night parrot, the Australian Government provided no assistance to to secure the only known extant population in Pullen Pullen Reserve.

Bush Heritage Australia secured nearly 850,000 hectares and established 11 new protected areas with financial support from the National Reserve System program before the program was terminated.

¹⁰⁰ http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59350

¹⁰¹ Threatened Species Scientific Committee, 2016. *Pezoporus occidentalis (night parrot) Conservation Advice*. Australian Government, Canberra. <http://www.environment.gov.au/biodiversity/threatened/species/pubs/59350-conservation-advice-15072016.pdf>



MAJOR NEW INVESTMENT NEEDED TO MEET THE PROMISE OF 2030

A major increase in Australian Government investment is needed over the coming decade to meet the promise of 2030.

Australian Government investment is needed to:

- incentivise landholders to establish voluntary protected area covenants;
- incentivise new Indigenous Protected Areas and provide long-term financial security and capacity for their management;
- allow Indigenous communities, state parks agencies and private conservancies to purchase priority properties for protection;¹⁰² and
- provide structural adjustment to enable the conversion of government lands and waters to new national parks on land and sea.

Former National Reserve System program investments were found to be extremely cost-effective to buying and permanently protecting areas. At a cost of only ~\$44 per hectare, on average, they leveraged an average of six times this investment from state partners after taking into account their in perpetuity financial commitment to manage protected areas.¹⁰³

In 2014, WWF estimated that at least \$170 million in annual investment by the Australian Government would be needed to secure a mixture of private land covenants, Indigenous Protected Areas and land purchases to meet the Aichi 11 Target, leveraging funds from state and non-government partners.

The National Parks Australia Council subsequently estimated at least \$660 million would be needed just for land acquisition to reach Aichi Target 11.¹⁰⁴

¹⁰² WWF, 2019. *Towards Two Billion Trees* <https://www.wwf.org.au/what-we-do/2-billion-trees>

¹⁰³ Table 4 in Taylor, M.F.J., et al. 2014. *Building Nature's Safety Net 2014: A decade of protected area achievements in Australia*. WWF-Australia.

¹⁰⁴ May, S. 2017. *Completing Australia's National Reserve System of Protected Areas*. Report for the National Parks Australia Council.

An earlier study estimated an additional 87.7 million hectares of uncleared habitat, and 0.1 million hectares of degraded habitat could be protected and restored to save climate refuges for threatened species, using a combination of land purchases, state land tenure changes and Indigenous Protected Areas at a total cost of \$3 billion if directly funded.¹⁰⁵ Voluntary covenants on private land were not considered in that analysis, but if they were employed as the dominant means of securing new protected areas, costs could be greatly reduced.

The Australian Conservation Foundation recommended a \$4.5 billion National Environmental Fund, and tax incentives for nature conservation to support the long-term protection and recovery of wildlife and ecosystems across Australia.¹⁰⁶

The totality of Australian environment spending (0.8% of GDP) is deemed by experts to fall far short of the minimum needed to effectively conserve biodiversity (2% of GDP).¹⁰⁷

Achieving the promise of 30% of each bioregion protected by 2030 would require a major boost to environmental spending by the Australian Government.

Some 106.5 million hectares would need to be protected to reach the target in all bioregions on land, and 68 million hectares on sea (as detailed above, Figure 17). This is likely to require a multi-billion dollar investment over the next decade. The exact amount will require detailed analysis, as much depends on the final mix of different protected areas added, but \$170 million a year is sure to be at the lower end of what would be necessary.

¹⁰⁵ Maggini, R., et al. 2013. *Protecting and restoring habitat to help Australia's threatened species adapt to climate change*. National Climate Change Adaptation Research Facility reports, Gold Coast, Queensland.

¹⁰⁶ Australian Conservation Foundation. 2020. *Recover, rebuild, renew: Let's make things right for people and our country*. Available from https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/17414/attachments/original/1590465717/ACF_Economic_Recovery_2020_v9_sml.pdf?1590465717

¹⁰⁷ Richie, E., et al. 2018. Cited above.



© WWF-Australia

FUNDING SOURCES ALREADY AVAILABLE



Even without boosting environmental spending, there are existing Australian Government programs - such as the \$1 billion National Landcare Program and \$2 billion Climate Solutions Fund¹⁰⁸ - that could also deliver on international protected area commitments with only minor changes in policy.

The Australian Government reports that \$425 million has gone towards National Landcare Program projects supporting threatened species since 2014.¹⁰⁹ However, the focus of this program is not exclusively on matters of national environmental significance, nor is there a sub-program devoted to strategic protected area growth, apart from the small (\$15 million) Indigenous Protected Areas program budget.

The pilot Agriculture Stewardship grants sub-program of the National Landcare Program is exploring the Biodiversity Certification of farms.¹¹⁰ This program could also support strategic growth of protected areas by incentivising voluntary covenants over high conservation value portions of agricultural properties, serving to boost the sustainability credentials of Australian agriculture at a time when markets are increasingly demanding such credentials.

Based on the history of the former Emissions Reduction Fund, most Climate Solutions Fund funding will likely flow to native vegetation carbon sink projects, primarily on grazing properties.

¹⁰⁸ National Landcare Program website <https://www.agriculture.gov.au/ag-farm-food/natural-resources/landcare/national-landcare-program>
Climate Solutions Fund - Emissions Reduction Fund website <https://publications.industry.gov.au/publications/climate-change/climate-change/government/emissions-reduction-fund.html>

¹⁰⁹ Australian Government, 2019. *Threatened Species Strategy: Three-year report*. <https://www.environment.gov.au/biodiversity/threatened/publications/threatened-species-strategy-year-three-progress-report>

¹¹⁰ *Sustaining the Future of Australian Farming* website <https://www.agriculture.gov.au/about/reporting/budget/sustaining-future-australian-farming>

It would take very minor policy changes to prioritise Climate Solutions grants to permanently protect threatened natural carbon sinks that are also of great value for biodiversity conservation, thus also contributing to the promise of 2030.¹¹¹

These existing programs could more effectively and permanently conserve biodiversity if grants issued under them were designed to do “double duty” by being tied to the permanent protection of high conservation value areas via covenants, or by assisting state, private or Indigenous agencies to acquire areas for protection to meet strategic goals for ecological representativeness, as well as conserving key biodiversity areas, critical habitats, climate refugia and corridors.

DESIGN AND PRINCIPLES

Equity and effectiveness of protection and integration into wider landscapes and seascapes of protected areas can also be advanced by:

- following the CAR principles in the National Reserve System strategy, of securing ecologically adequate samples representative of all Australian ecosystems - terrestrial, freshwater and marine;
- prioritising protection to critical habitats, key biodiversity areas, climate refugia and corridors on land and sea;
- instituting a process for independently auditing protected areas, for conformity with the IUCN protected area definition and management guidelines, and for effectively managing

¹¹¹ The Green Institute, 2016. *Mulga bills won't settle our climate accounts: An analysis of the Emissions Reduction Fund*. <https://www.greeninstitute.org.au/publications/mulga-bills/>

biodiversity conservation, in particular those areas subject to commercial natural resource extraction;

- ensuring long-term financial security and adequate funding for all protected area managers, to effectively abate pervasive threats to biodiversity, including climate change, inappropriate fire, weeds and pests;
- ensuring the inclusion of Traditional Owners in the planning and management of state/territory protected areas and assisting those groups who wish to buy back and protect priority areas; and
- supporting certified sustainable agriculture and fisheries in our wider landscapes and oceans, complementing or contributing to the protected area system through the inclusion of biodiversity covenants in certification.

ECOSYSTEM SERVICES RETURN ON INVESTMENT

The Australian Government should commission a valuation of the return on investment from the protection of ecosystem services in the national protected areas network, such as human wellbeing and ecotourism, consistent with Australia's *Strategy for Nature* progress measure 3B *Quantification of natural capital and its benefits, such as through environmental-economic accounts*.

PROTECTED AREAS ARE ECONOMICALLY VALUABLE - GALLERY



PROTECTED AREAS A KEY PART OF POST-DISASTER ECONOMIC RECOVERY

In the wake of the catastrophic 2019-20 summer bushfires and the COVID-19 pandemic, Australian and state governments are anxious to invest in economic recovery. This is particularly true for tourism, which has been devastated by the border closures and lockdowns necessary to control the pandemic.¹¹²

The Australian Conservation Foundation (ACF) has recommended an economic recovery investment of \$2.4 billion in conservation and land management, a \$4.5 billion National Environmental Fund, and tax incentives for nature conservation to support the long-term protection and recovery of wildlife and ecosystems across Australia. This would help to create 24,000 jobs and speed the transition to renewable energy to help mitigate global climate change.¹¹³

In 2019, Tourism Australia devoted \$38 million to campaigns in key tourism markets, in an effort to attract more visitors to Australia.

After the catastrophic 2019-20 bushfires, it also received \$76 million in bushfire recovery assistance for such marketing, with \$20 million to be spent on domestic marketing to encourage Australians to holiday locally.

Since the outbreak of COVID-19 in early 2020, governments have offered stimulus payments to revive domestic tourism and air travel. Tourism Australia focussed on building market interest, with an eye to post-lockdown recovery. Almost all of the imagery used in its campaigns were of national parks, wildlife like quokkas, koalas and whale sharks, and wild scenery (see images at right).¹¹⁴

Despite the fact that 68% of total national tourism value comes from nature-based tourism, the national tourism strategy includes no goal to expand and conserve the fundamental asset of the tourism industry:

112 SGS Economics and Planning. 2020. *COVID-19 and summer bushfires: The economic impact on your suburb and pathways to recovery*. <https://www.sgsep.com.au/publications/insights/the-economic-impact-of-covid-19-and-bushfires>

113 Australian Conservation Foundation. 2020. *Recover, rebuild, renew: Let's make things right for people and our country*. Available from https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/17414/attachments/original/1590465717/ACF_Economic_Recovery_2020_v9_sml.pdf?1590465717

114 Tourism Australia's With Love from Aus campaign video <https://www.youtube.com/watch?v=kKma8WB4JyY>

Australia's wildlife and wild places. Nature-based tourism is only mentioned in passing in the 2020 national tourism strategy and national parks and wildlife not at all.¹¹⁵

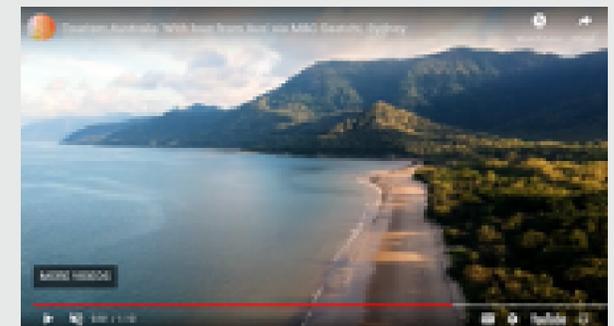
The Australian Government tourism strategy and post COVID-19 recovery stimulus package should also include financial support for the strategic growth of Australia's parks and protected areas, a pillar of Australia's economic and environmental recovery.

CONCLUSION

A major Australian Government investment over the next decade into the strategic growth of private, public and Indigenous protected areas would advance multiple cross-portfolio objectives for the Australian Government. It would:

- meet the promise of 2030 to protect 30% of Australian biodiversity on land and at sea in an ecologically meaningful way;
- save Australian wildlife from extinction;
- help close the gap on Indigenous employment, health and wellbeing;
- draw down the greenhouse gas pollution warming our planet;
- help rural communities develop resilience to drought and climate change;
- secure clean water and many other economically valuable ecosystem service benefits for all Australians; and
- rebuild the \$40 billion-a-year nature-tourism industry in the wake of the 2019-20 bushfires and COVID-19 disasters by expanding the destinations and experiences capable of attracting visitors.

115 Tourism Australia. 2011. *Tourism 2020 strategy*. <https://www.tourism.australia.com/content/dam/assets/document/1/6/w/u/3/2002107.pdf>



ACKNOWLEDGEMENTS

Author Martin Taylor gratefully acknowledges the assistance of Helen Murphy, Stephen van Leeuwen, Rachel Lowry, Paul Sattler, James Fitzsimons, Andrew Piccone, Rebecca Spindler, Emma Warren, Stuart Blanch, James Trezise, Tim Hughes, Mark and Angela McCaffrey, Matt Whitting, Jamie Pittock and the WWF-Australia Eminent Scientists Group.

METHODS

CAPAD 2010, 2016 and 2020 were provided by the Australian Government Environmental Resources Information Network (ERIN) for terrestrial and marine environments.¹¹⁶ Areas with “not applicable” for the IUCN management category or “N” for NRS protected area were excluded. Areas with IUCN Categories Ia, Ib and II were dissolved into a single, “strictly protected” sub-category, and all others into a “partially protected” subcategory.

Overlaps were removed by dissolving these subcategories, and unioning them. Where an area was mapped as more than one category, the higher level of protection prevailed (for example, where dugong protected zones in IUCN IV overlap marine national parks in IUCN II).

Areas in these three management groupings and for terrestrial CAPAD for the four IUCN governance categories were calculated in GDA94 Albers projection and tabulated. Area inaccuracies are inevitable in choosing a single projection rather than zonal projections.

The non-overlapping protected area layers derived as above were intersected with IBRA (Interim Biogeographic Regionalisation of Australia) version 7 bioregions and IMCRA (Integrated Marine and Coastal Regionalisation of Australia) v4 marine bioregions and areas in each bioregion tabulated.

Terrestrial ecosystem proxies were mapped as 100-metre pixel grid intersections between IBRA 7 subregions and NVIS version 6 Pre-European Major Vegetation Subgroups, snapped to the NVIS grid. Disregarding intersections of less than 100 hectares (100 pixels) or unclassified vegetation, we intersected with CAPAD 2010, 2016 and 2020, tabulated areas and assessed attainment of the minimum protection standard of 15% of original extent for each proxy ecosystem. This standard was modified for small ecosystems such that if 15% of the original area was less than 1,000 hectares, then at least 1,000 hectares was the standard. If the total ecosystem area itself was less than 1,000 hectares, then the minimum standard was 100%.

Marine ecosystems were also mapped as described in the 2014 *Building Nature's Safety Net* report and assessed in the same way, as were terrestrial ecosystems.¹¹⁷

Protected areas were also intersected with the non-denatured Threatened Ecological Communities and Species of National Environmental Significance Database spatial layers 2021 release obtained under licence from ERIN. Areas of known or likely-to-occur habitats protected were calculated and tallied with reference to the nominal minimum protection standard of at least 30% of the known or likely-to-occur (KL) combined habitat protected, or if this is less than 1,000 hectares then at least 1,000 hectares. If the total KL habitat itself is less than 1,000 hectares, then the minimum standard is 100%. If 30% of KL is > 10 million hectares, the standard is capped at 10 million hectares.

For the freshwater representation analysis, the Geoscience Australia surface water lines and polygons were downloaded.¹¹⁸ We excluded artificial water lines or polygons, and unnamed, minor watercourses. These were then converted to 100-metre pixel rasters to bring all statistics to the same area-based units, and differentiated further into the 191 national level 2 catchments and types of water/wetland bodies.¹¹⁹

Areas were tabulated by catchment and type of water/wetland body, both in total and within protected areas as they were in 2010, 2016 and 2020, and catchments meeting the 10% threshold counted and mapped.

For analysis of the ecological representation attained and potentially attainable on Indigenous interest areas, an Indigenous land interests layer was produced combining CAPAD 2020 with the ABARES Indigenous Forest Tenure 2020 layer (which also includes tenure for non-forest areas),¹²⁰ as shown in Figure 17, and analysis proceeded using this layer in a similar fashion to that described above.

For the analysis of potential to reach the 30% target in terrestrial bioregions only, we combined Australia's Catchment-scale Land Use 2020 layer (ACLU 2020) from ABARES¹²¹ with CAPAD 2020 and also NVIS v6 Extant Major Vegetation Groups (MVGE)¹²² to produce a five-level “protectability” 50-metre grid snapped to the ACLU grid, as shown in Table 1 and as mapped in Figure 21.

This layer was intersected with terrestrial bioregions. For each bioregion it was determined if the 30% target could be reached readily with undeveloped unprotected land, or if cleared and developed land would require restoration to get there.

116 <https://www.environment.gov.au/fed/catalog/main/home.page>

117 Taylor, M.E.J., *et al.* 2014. Cited above.

118 Crossman, S. and Li, O. 2020. *Surface Hydrology Lines (Regional) and Surface Hydrology Polygons (Regional)*. Geoscience Australia spatial data. (<https://www.ga.gov.au/scientific-topics/water/national-surface-water-information>).

119 Stein, J.L., *et al.* 2020. *National Catchment Boundaries v 1.1.4*. Geoscience Australia spatial data. (<https://www.ga.gov.au/scientific-topics/water/national-surface-water-information>).

120 <https://www.agriculture.gov.au/abares/forestsaustralia/forest-data-maps-and-tools/spatial-data/indigenous-forest>

121 <https://www.agriculture.gov.au/abares/aclump/land-use/data-download>

122 <https://data.gov.au/dataset/ds-environment-ab942d6d-9efd-4cf2-bec7-4c1521b83803>

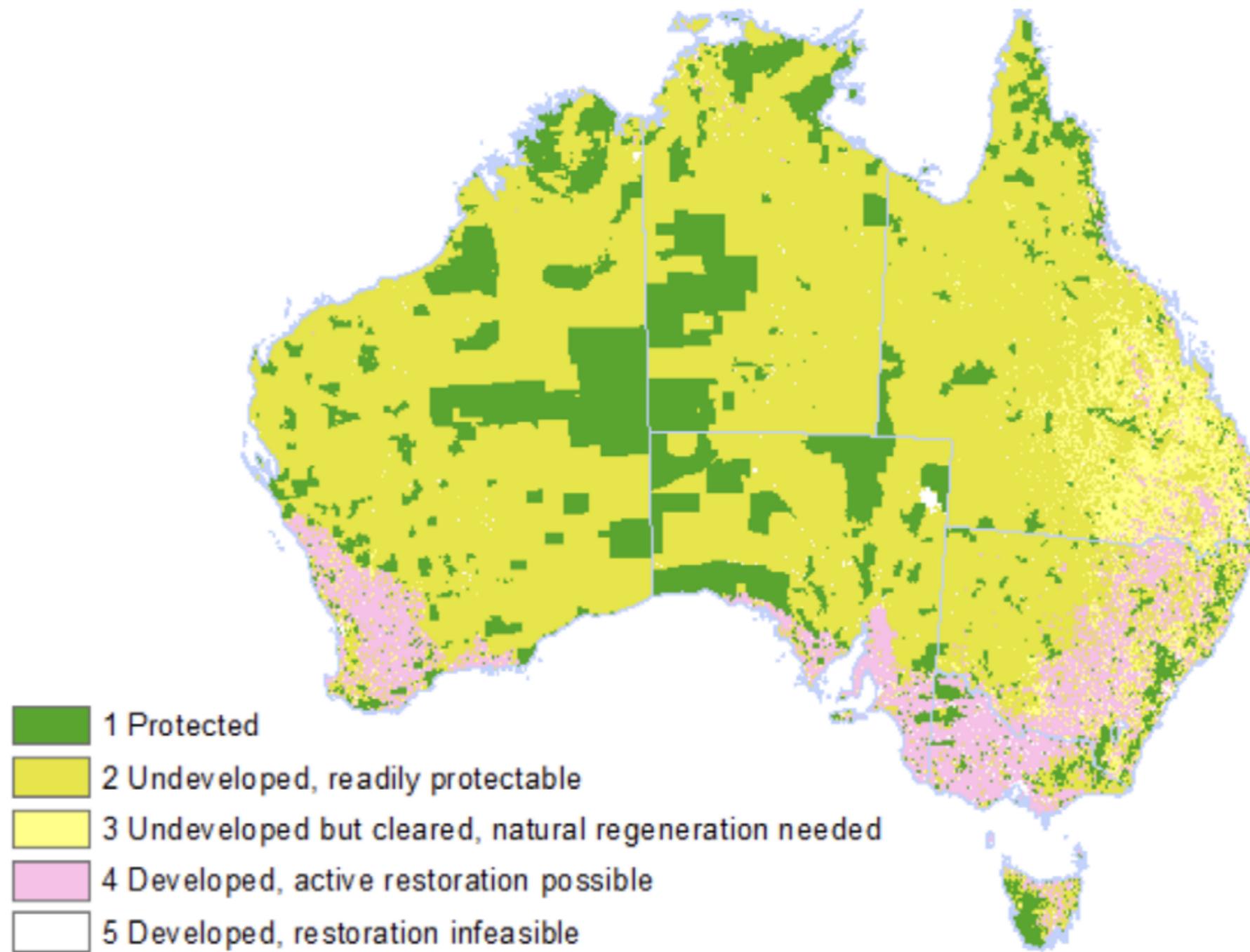
TABLE 1.

Table 1. Derivation of a national “protectability” layer, combining land use, CAPAD 2020 and the National Vegetation Information System.

Protectability	ACLU 2020	CAPAD 2020	MVGE
1 Protected.	Any	Protected	Any
2 Undeveloped, protectable now.	1.n.n Conservation and natural environments, 2.n.n Production from natural environments, 3.1.4 Environmental plantations, 6.n.n Water features other than intensive or artificial	Not protected	Not cleared
3 Undeveloped but cleared, natural regeneration possible.	As for 2 above	Not protected	Cleared (25, 29)
4 Developed, but potentially restorable.	3.n.n Dryland agriculture and plantations, 4.n.n Irrigated agriculture or plantations, 5.1.5, 5.2.8, 5.3.8 Abandoned intensive uses, 5.4.n Rural residential	Not protected	Any
5 Developed, and intractable to restore.	5.n.n Intensive uses other than above, 6.n.n Water intensive uses other than above	Not protected	Any

FIGURE 21.

Figure 21. “Protectability” of land in Australia.



**OUR MISSION IS TO CONSERVE
NATURE AND REDUCE THE
MOST PRESSING THREATS
TO THE DIVERSITY OF LIFE
ON EARTH.**



Working to sustain the natural world for the benefit of people and wildlife.

together possible™ wwf.org.au

WWF-Australia National Office

Level 1/1 Smail Street,
Ultimo NSW 2007
GPO Box 528
Sydney NSW 2001

Tel: +1800 032 551
enquiries@wwf.org.au
[@WWF_Australia](https://www.facebook.com/WWF_Australia)
wwf.org.au