

## Australia's Faunal Extinction Crisis

### Submission to the Inquiry of the Environment and Communications Committee of the Australian Senate

*"Humans endanger the existence of species in three principal ways. The first is through direct exploitation such as hunting. Second is the biological havoc that is occasionally wreaked following the introduction of alien species into ecosystems.... The third and by far the most important mode of human driven extinction is by the destruction and fragmentation of habitat... The continued growth of human populations in all parts of the world daily encroaches on wild habitat, whether through expansion of agricultural land, the building of towns and cities or the transport infrastructure that joins them. As the habitats shrink, so too does the earth's capacity to sustain its biological heritage" -"The Sixth Extinction: Biodiversity and its Survival" – Richard Leakey 1995*

*"The species extinction crisis is a threat to civilization second only to the threat of nuclear war" Club of Earth, 1986, quoted in Leakey op cit 1995*

*"Over the past 530 million years there have been five mass extinctions of species – the last 65 million years ago when the dinosaurs disappeared. For each of the 'Big Five' there are theories of what caused them, some of them compelling but none proven. For the Sixth Extinction, however, we do know the culprit. We are." Leakey, op cit, 1995*

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### Introduction:

Prominent among its major negative achievements, Australia leads the world in terms of species extinction. As part of this pre-eminence, Australia has achieved the highest number of mammals declared extinct in the period since the arrival of Europeans – with so far 29 mammals lost forever.

In stark contrast, the United States has only had to declare 2 mammals as extinct throughout the whole period since Europeans first arrived and settled there - some 200 years prior to their arrival and initial settlement in Australia

Tellingly, many of these extinctions have been recorded in recent times: since 2009 three vertebrates – a bat, a marsupial and a skink – have all disappeared: despite Australia signing up in 2010 to global targets which aimed to eliminate extinctions under the United Nations Convention on Biological Diversity.

At first glance it may even appear that in the total scheme of things that number of lost unique creatures is "bearable" – but this fails to comprehend the extent to which each ecological community across our total natural environment is a complex and interconnecting interactive network, where the loss of any one species can trigger in turn a range of other disruptions and losses and imbalances that threaten the ongoing sustainability of the whole. Other links also may then successively abrade and break down, to the point where the ecosystem breaks down and ultimately fails.

More broadly, indicators for biodiversity are in substantial decline as illustrated in the 2017 State of the Environment Report; which raised concerns across the board, affecting our reefs, rivers, forests and wildlife across the continent.

At this point, Australia has nearly 2,000 species and ecological communities listed as threatened under national legislation. This includes relatively little known species of insects, frogs and fish as well as plants – and so on through to such prominent species as Leadbeater's Possum (the faunal emblem of Victoria), the Cassowary, and even the Koala. Threatened ecological communities – and their faunal residents – include grasslands, banksias woodlands, rainforest and alpine wetlands.

The threats to these communities and species are both diverse in nature, and interconnected. These threat elements include habitat loss, invasive species, bushfires, disease as well as the mounting pressures of global warming and climate change.

However, over and above all of these contributory elements, the predominant past, present and immediate future threat and peril to wildlife and ecosystems is overwhelmingly the destruction and loss of habitat.

As threats and pressures from climate change, invasive species, wildfire, and above all habitat loss continue and increase, the process of identifying and protecting critical habitat from further incursions and destruction is absolutely essential to militate against further population declines and any potential further extinctions of threatened species. In this respect, we not only have international obligations to meet, but also and at least as importantly, an absolute responsibility to maintain

the integrity and sustainability of our environment and its constituent ecosystems for every present Australian resident and all the generations to come.

And it does not take much further depth of analysis of the extent to which the industries and constituent elements and activities of our economy, communities and our society are integrated with the operation of our environment and its ecosystems (tourism in all its various aspects just as an obvious example) to begin to understand the ways in which and extents to which our economy and its communities and our whole social coherence would decline in concert with the progressive further deterioration of our environment and the rich diversity of its ecosystems. This in addition, of course, to the loss of vitally important aspects of the quality of our lives.

We are the custodians and trustees of the rich biodiversity and its ecosystems which we have inherited, in trust for all our children and all their children and the future they will inherit.

#### **Main Risk Factors further considered:**

- **Human Population growth:**

It has been reckoned the earth's human population reached 1 billion around 1800, and then grew to reach 2 billion around 1900. Despite the millions lost in the wars, famines etc of the 20<sup>th</sup> century, the human population reached 7 billion in 2011 and at that rate of growth is projected to reach 11 billion by 2100.

In Australia, the human population stood at about 5 million in 1900, grew rapidly to 12 million in the 1970s, to 20 million by 2000 and now stands at 25 million – a geometric progression driven principally by an extraordinarily high rate of immigration that demonstrably exceeds our growth in infrastructure and with similarly demonstrable negative impacts our unique flora and fauna in terms of destruction of critical habitat and critical endangerment of vital species.

The tensions and conflicts of interests which are being created and intensified as between the agents of conservation and preservation of critical habitat, and those of commercial, residential and agricultural development – with local authorities as the hardly-disinterested adjudicator in each instance – can be readily demonstrated by a quick sweep through the some 450 petitions on the website [www.change.org](http://www.change.org) and many, many more that have appeared on it during the course of the past year under the broad category "Environment":

- Petition to Minister Frydenberg to halt the bulldozing of 2000h of native forest for agriculture near the Great Barrier Reef – a dual threat to critical habitat and of runoff further endangering species of the Reef;
- Protection sought for stands of important trees planned for felling by VicRoads for building of new highway;
- Various petitions against sources of plastic waste pollutants endangering green sea turtles and against a variety of proposed commercial developments along Queensland coast that impact on foreshore areas relied on by marine turtles as nesting sites: disenable the turtles' appropriate use of the sites, and we lose the turtle population...
- Petition to NSW government to stop planned commercial developments in declared wild life protection corridors;
- Petition to halt proposed AGL development of a site that will destroy coastal woodlands on Westernport Bay;
- Petition to Tasmanian government for enhanced protection from logging and development of further areas of wilderness which is home to some 60 rare or endangered species
- Petition to stop unsustainable aspects of commercial netting in the Great Sandy Marine Park;
- To NSW government in respect of the delay since 1972 in the proclamation of the threatened Awaba Conservation Area critical habitats around Lake Macquarie to recognize and protect threatened and endangered species for which this is a vitally important refuge;
- To local Council and NSW government seeking to protect wooded areas with recognized threatened species against proposals to bulldoze those areas and develop, near to Sydney's northern beaches;
- Oppose plans to clear remnant woodlands of high conservation value and threatened species habitat near Terrigal NSW, proposed to be bulldozed to clear for commercial developments;
- Oppose proposed new coal mine that would clear important coastal woodlands along Great Sandy Strait in NSW;
- Against the destruction of important old-growth trees and woodland to enable building of highway in south-west WA;
- Stop logging that is progressively destroying the habitat and nesting sites of the endangered Swift Parrot in Tasmania;

- Stop proposal for the destructive clearing to build a boat ramp on Black Currant Island, within the Great Barrier Reef Heritage Zone;
- Stop the proposed catastrophic mining in the Helena Aurora Range in WA;
- Oppose QLD Government approval of the bulldozing of 45h of green-space, habitat to some 100 species of birds, to enable the building of 900 dwellings in buildings of 8 storeys;
- Save Koala habitat in Bellbird Park, QLD, from clear-felling approved by the Ipswich City Council;
- Stop the destruction of the important WA Beelihar Wetlands to enable the building of a highway through, and associated residential developments;
- Stop the logging in the native forests around Eden, NSW, and associated environmental destruction, for woodchips;
- Save the important Dumbarton Grasslands in Victoria, proposed to be cleared for residential and commercial developments;
- Save the Mission Bend ecological system in Queensland from destruction under Council plans for commercial development;
- Save mature tree plantings in northern Sydney suburbs –haven for a variety of birds – proposed to be cleared for urban development;
- Save 3h of important remnant bush land in Rye, Mornington Peninsula Victoria, habitat to 18 species of birds and 54 plants, many vulnerable or endangered, threatened by local plans for further housing development;
- Save already much reduced remnant banksia woodland adjacent to Jandakot Airport, WA, recognized habitat for endangered birds and plants, from being bulldozed for commercial development;
- Save important remnant riparian area and associated nature sanctuary on the Swan River, WA, proposed by Melville City Council to be cleared to enable a commercial entity to construct an artificial surfing facility;
- Save a key area of important coastal vegetation on south coast of WA, which will face clearance under local Council plans to enable the construction of a luxury seaside resort;
- Oppose plans by the Bundaberg Shire Council in Queensland to approve the inappropriate seafront development of a 9 story accommodation and commercial building which will also threaten the nearby turtle rookeries – the largest and most important in this hemisphere.
- Oppose plans by shire council in Pittwater NSW to sell off a key element of important remnant rain forest bush-land, to be bulldozed to enable the construction of a gated residential estate, breaching a natural wildlife corridor.
- Opposition to the Eurobodallla Shire Council approving an evening High Speed Car Rally in the Mogo State Forest, also agreed by NSW Police and NSW Forests; which will significantly endanger the wildlife out on those forest tracks at the time of the event.

This fairly random selection from the total – and ever increasing – array of petitions in support of sustainability and the retention of viable areas of original or remnant woodlands, in all parts of the country and ad-hoc destructive projects being pushed through in the teeth of vocal community outrage and protest, provides clear glimpses of the ways in which and extent to which, our remaining areas of critical habitat are being chipped away, bit by bit and piece by piece, under the pressures of population growth and associated infrastructure extension. With the inevitable consequence that these remnant habitats and the vital wildlife corridors joining them will be thinned out progressively and reduced at best to disconnected bits and pieces incapable of providing the required range of shelters – and the wildlife will also progressively die out and disappear – forever, in too many instances.

- **Logging of Critical Habitat Areas**

This is in effect a subset of the preceding issue: the extent to which commercial intrusion and damage to critical habitat includes arrangements entered into by various State governments to permit logging operations in critical habitat areas. This aspect was touched upon by a number of the petitions on [www.change.org](http://www.change.org) glanced at above: the logging of the areas needed for nesting by the endangered Swift Parrot; the logging approved by the Victorian State Government of important old growth areas which harbor the endangered Leadbeater's Possum – which is, paradoxically, the faunal emblem of the State. The fact that so many logging activities are licensed to take place in areas which have some level of environmental protection as State Forests and so on, appears to be a contradiction in terms and purposes that defies all reason...

- **Intrusion of Alien Species**

As residential areas encroach further and further into critical-habitat bush-land, people moving in bring their domestic animals with them, and both domestic cats and dogs have varying capacities to kill or disrupt local fauna –so much so that in some areas there are regulations about securing of those domestic animals; regulations which are also often ignored or breached. But this is simply the tip of the iceberg in Australia, which from its early times has unintentionally enabled successive incursions of feral animals inimical to our critical habitats and their vulnerable wildlife. These include:

- Domestic cats and dogs that have become feral and now permeate all ecosystems;
- Rabbits, initially brought here as a farmed food source, now running wild in all parts of the country;
- Foxes, introduced presumably not to eat, now in plague numbers across mainland Australia;
- Cane toads, ill advisedly introduced by Queensland in 1935, now pervasive across most of the country;
- Wild horses or “brumbies” – more aesthetically pleasing in appearance than cane toads but brutally destructive of sensitive critical habitats and a conservation nightmare;
- Feral pigs, similarly pervasive and similarly destructive of critical habitat
- Feral camels, descendents from transport animals escaped or released into the wild
- Feral donkeys
- Feral cattle
- Feral goats
- Feral deer
- Feral buffalo
- Introduced birds such as Indian Mynas and Starlings

,,, To name but the main and most destructive offenders; their name is legion as they are many and various... In addition of course to other unpleasant creatures who have arrived inadvertently as stowaways in the cargoes on ships and add to the complex array of competitive threats affecting our critical habitats and their vulnerable wildlife. Both individually and collectively their negative and destructive impacts are vast and entirely inimical to the present and future sustainability of those critical habitats and the endangered species which still struggle to inhabit them.

- **Disruptive and Destructive Incursions into Wildlife Corridors**

A number of the quoted and other petitions on the website raise particular concerns as to various development proposals which have the effect of removing elements of critical habitat which form essential elements of viable wildlife corridors and one in particular that relates to a development proposal to be located actually in a declared wildlife corridor. It is obviously most important that in all such cases of piecemeal incursion into critical habitat, a comprehensive environmental assessment must be carried out which examines and evaluates the extent to which the important wildlife corridors are disrupted, and whether what remains will be, in effect, an unsustainable “archipelago” of island remnants too small and isolated to be viable ecosystems.

To quote biologist David Quammen, *“The problem of habitat fragmentation, and of the animal and plant populations left marooned within the various fragments under circumstances that are untenable for the long term, has been showing up all over the land surface of the planet... Within a few decades, if present trends continue, we’ll be losing a LOT of everything.”* – and subjects the troubling phenomenon to intensive forensic examination in his book *“The Song of the Dodo: Island Biogeography in an Age of Extinction”* (1996). Continual fragmentation of critical habitats is a recipe for disaster in terms of the sustainability of species.

- **Chemical Pollution.**

From my limited perspective this aspect seems to have gone quiet in recent times, since it was first placed explosively on the agenda by Rachael Carson in her book *“Silent Spring”* (1962 – still very much in print and selling steadily) which forcibly raised awareness of the environmental poisoning downsides of chemical insecticides; which despite the self-interested obfuscation of the chemical industry, wrought essential changes in the licensing and usage of such products.

But given the global pervasion of chemical products such downside risks still actively remain (consider the current US court decision in respect of claims of cancers caused by the chemical weed-killer “Round-up” – and similar alarms raised as to chemical contamination by historical fire-fighting fluid components in locations around Australia... Also there are strong indications of the extent to which various agricultural chemicals significantly damage and reduce bee populations – vital as pollinators throughout our ecosystems.) –and these have been further highlighted by Canberra-based biologist Julian Cribb in his book *“Poisoned Planet”* (2015). Chemical exposure still remains a significant risk factor for wildlife – and all the rest of us.

- **Global Warming and Climate Change**

For pretty much the past 30 years or so, the increasingly firm and certain conclusions of global scientific research in the relevant areas of monitoring and inquiry, has consistently been that steadily increasing levels of emissions of the “greenhouse gases” that have kept the Earth warmed for the past period, are steadily and progressively resulting in a warming planet and dangerously higher average climate temperatures – which increase the severity of critical weather events, in particular of wildfire. Over that period those conclusions have been progressively confirmed by ongoing monitoring and forward projections that consistently demonstrate that unless those emissions of greenhouse gases are progressively reduced to hold climactic temperatures within a relatively “safe” range, the increased global warming will impact dangerously upon the global environment and affect the ecosystems all over the world in adverse and destructive ways.

That process of a warming global environment with associated damage to ecosystems has been evident and increasingly evident over that period, in ways detrimental to the conditions which our flora and fauna reliant on the operation of those systems, require for their sustainability in the short, medium and longer term; and already the effects of climate change are apparent and increasingly threatening to the survival of many vulnerable plants and animals.

In a very real sense, the challenges were starkly highlighted by the publication on 6 August 2018 of a paper: “**Trajectories of the Earth System in the Anthropocene**” (<http://www.pnas.org/content/early/2018/07/31/1810141115>) which presents forward projections which underline the risks for “*the entire Earth System – biosphere, climate and societies*” in the foreseeable future, and the need for all nations, societies and communities to act decisively if we are to be able to sustain the biosphere which we inhabit.

This analysis of the range of threats and challenges which face ourselves and all other living things presents us with the over-arching context within which we need to shape our custodianship and trusteeship of the living world which we inhabit with those ecosystems and with which we must essentially, positively and productively co-exist.

Which imperative over-arching context presents us immediately with a similarly imperative need:

- **Resolve and remove incongruities, contradictions and conflicts within and between approaches at National, State and Local Authorities**

The clearest example of these inconsistencies and contradictions is the **Kosciuszko National Park** with a vitally important role in conservation of critical habitats – yet much of it is still in recovery from the “bad old days” of cattle grazing in the “high country, and there are still some residual pressures, particularly in times of drought, for that facility to be reconsidered. Another uneasy aspect is provided by the increasing pressures of the “snow tourism” industry; and as those user numbers progressively increase there are further pressures on clearing further areas for ski runs and associated infrastructure, removing vegetation and clearing rocks (habitat of the broad-toothed rat) to facilitate further numbers to these installations.

Again, it is the site of the amazing engineering of the Snowy Mountains Scheme – which was undertaken at a time when the environmental damage was not fully appreciated, and of more than 200 resulting damaged areas, my understanding is that some 50% of these have not yet been fully remediated. Added to which is the politically-based project “Snowy Mk II” to construct the means to achieve pumped-hydro sourced electrical power needed to reinforce the “grid” – which in turn will result in loss of critical habitat and the dumping of thousands of tons of rocks and spoil within the Park.

To quote the NSW National Parks website: “*Invasive species threaten biodiversity in NSW national parks. In NSW, weeds and pest animals have been identified as the next biggest threat to Australian native plants and Australian animals after land clearing.*” In addition to a wide range of invasive weed plants, the park is very seriously threatened by the activities of a variety of feral animals, prominent among them feral pigs, foxes, wild dogs, feral cats and in particular the feral horses. The damage that these “noxious animals” do is massive, and that occasioned by the rapidly increasing number of the wild horses in particular is a growing major threat. Expert scientific advice repeatedly tells us that we must urgently reduce or perhaps better eradicate these wild horses – or risk the future of some 31 species of unique plants and animals, including the threatened Corroboree Frog. Feral horses ring-bark trees, overgraze alpine meadows and spread weeds in Kosciuszko National Park and other protected areas. They out-compete our high country wildlife, displacing and starving wombats, wallabies and other native animals. They trample Kosciuszko National Park’s fragile landscape, destroying streams and alpine wetlands. And yet on Wednesday 6 June the NSW Government passed the Kosciuszko Wild Horse Heritage Bill 2018, entrenching feral horses in one of Australia’s most important protected areas. This blocking move from NSW Parliament defies reason and must be resolved and removed by negotiation between the National and NSW governments as a matter of extreme urgency.

An even more sensitive and complex balancing act between competing interests and priorities is provided by the **Great Barrier Reef National Park**. The extensive national and international tourism industry which the Reef supports is a significant part of the Queensland economy and vital to the townships and communities along the coast, yet a recognized risk factor to the reef is the extensive and increasing levels of commercial development along the coastline, including the major port facilities at Abbott Point, Hay Point and Gladstone which in turn service the mining and minerals industry. The construction work involved including the dredging and dumping of spoil increases to the water quality threats affecting the reef, along with run-off from agriculture and other industries along the coast. The further development of mining also increases the numbers and sizes of shipping travelling through the reef – colloquially known as “The Miners’ Highway”: which in turn adds to water quality risks of the reef in a variety of ways:

When the Chinese bulk coal carrier MV Shen Neng I ran aground on Douglas Shoal northeast of Gladstone in 2010, it left a 400,000-square-metre scar – the largest ever recorded in the Great Barrier Reef. More than 600 shipping accidents were recorded in the region between 1987 and 2009, not to mention the many near misses that have gone unreported. Associated hazards relate to oil or other spills, dumping of rubbish and even the introduction of other invasive marine life.

Both the present federal government and the Queensland government have endorsed the opening up of vast new mines in the Galilee Basin, in particular the Adani project, whose rhetoric was to create some 10,000 jobs – though now clarified that the ongoing number will be little more than 1,000. The benefits of which need to be offset on the one hand to the enormous environmental damage this will wreak in mine construction and operation – and in potential damage (a) to existing coal production in other areas e.g. in NSW whose product will allegedly be of lesser quality and thus close mines and shed jobs with falling sales; and (b) potentially also in damage to the tourism industry along the coast and loss of employment there also. The immediate and ongoing environmental costs – and the vast bill for eventual site remediation - are great and loom large in comparison with creation of an over-supply in a market with dwindling international demand and potentially falling prices that cast doubts about project cost-effectiveness...

These instances, and as seen elsewhere in a variety of the local petitions briefly noted in a previous section, where ad-hoc development proposals and similarly ad-hoc approaches by local councils and State government agencies which appear to be swayed by the immediate attractions of quick-fix developments or persuasive developers, which appear to bypass real and rigorous cost-benefit analysis of the irretrievable costs to the environment and sustainability, do appear to point to the need for a “national” agency and code of practice, including the need for an independent and forensic weighing of all the various factors bearing upon the short, medium and longer term implications of each project.– a comprehensive examination that also weighs up the “political” factors or those perhaps more about self-interest and personal gratification – to ensure that all such decisions are made via a fully transparent and inclusive process – in the national and longer-term interests of the nation, the wider community and all its people.

#### **Adequacy of Existing Funding for recovery plans for threatened species.**

My general and longstanding conviction is that either the funding is inadequate, or perhaps its administration is being poorly informed and targeted; or some sort of amalgam of these. While I am not in position to provide a wider critical analysis, I will simply draw attention to one “case study” recently publicized in the media because those better aware of these things have nominated this program for a Eureka Prize this year. For details go to: **On the frontline of the battle to save our most 'difficult' birds** -By Sherryn Groch, 25 July 2018 — <https://www.smh.com.au/national/on-the-frontline-of-the-battle-to-save-our-most-difficult-birds-20180725-p4ztiq.html>

This illustrates the extent to which and ways in which the extraordinary work of this extraordinary group is frequently enabled by their own personal commitment and passion to achieve a positive outcome for each of the endangered species they seek to bring back from the brink of extinction, and also from time-to-time by donations and crowd-funding – individual support from the kindness, generosity and commitment of members of the public.

Impressive and magnificent as this support is, it certainly illustrates starkly the absolute need for the allocation of appropriate and essential government funding to enable this group and all others of similarly committed environmental and ecological scientists to work to save our endangered heritage.

#### **Protection of Critical Habitat under National Law**

Australia currently has over 1900 species and ecological communities listed as threatened with extinction under our preeminent national nature law, the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act). The EPBC Act provides for the listing of threatened species and ecological communities and regulates destructive developments that may impact upon them. Alongside the regulation of development, the EPBC Act gives the Australian Government powers to protect threatened species. This includes overseeing the development of recovery plans for threatened species

and ecological communities and the provision to list habitat that is critical to the survival of a species on a national, critical habitat register. The EPBC Act defines critical habitat as 'habitat critical to the survival of a listed threatened species or ecological community. The law establishes a wide variety of matters that may be taken into account when identifying critical habitat. This includes whether the habitat is used during times of stress (for example; fire, flood, drought), is essential during any part of a species life cycle, is used by important populations, is necessary to maintain genetic diversity and evolutionary potential, provides a corridor, or any other way habitat may be critical.

The designation of critical habitat in Australia primarily occurs through the national critical habitat register. It is important to note that critical habitat designation does not create parks or reserves. Instead it places restrictions on actions which would result in the destruction of critical habitat, including fines and even imprisonment for persons who knowingly damage critical habitat. Improving Australia's approach to the management and protection of critical habitat will have important benefits for the recovery of threatened species and the awareness of species conservation in the broader Australian public. Paired with an improvement in recovery planning processes and threatened species list management, stronger critical habitat laws will greatly improve transparency and accountability in threatened species conservation. Similarly, such measures will also provide important signals to governments and developers regarding the location of critically important environmental values that must be avoided when planning development projects

### **The Failure of National Law in Protecting Critical Habitat**

Despite having over 1900 nationally listed threatened species and ecological communities, Australia's national critical habitat register lists only five places as critical habitat. The most recent critical habitat listing on the register was in 2005.

The Australian Conservation Foundation undertook analysis of existing recovery plans for animals listed as critically endangered and endangered under the EPBC Act. Out of 230 listed species it was identified that 127 (55%) had recovery plans and 105 (45%) had clearly identified critical habitat that was essential to their survival. These included specific areas and locations as well as specific environmental values that would easily enable the listing of critical habitat. Of the species surveyed, 25 (10%) had identified critical habitat wholly or partly located on Commonwealth land. Despite this, only two had habitat listed on the national critical habitat register.

Given the immediacy of threats and the importance of conservation actions for protecting critically endangered and endangered wildlife, it is of significant concern that no critical habitat has been listed for any species since 2005. It is clear that there are species on both Commonwealth and other land tenures that have sufficient scientific knowledge to warrant the listing of their critical habitat. Why then is Australia's national legal system failing to protect the most important places for our threatened wildlife? Because our pre-eminent law for conserving biodiversity and protecting the environment has not lived up to its name or its objectives when it comes to conserving threatened species.

### **Lack of Legal Enforceability**

The existing critical habitat provisions in the EPBC Act apply to all types of land tenure. However, due to an anomaly in the legislation, the penalty provisions for willfully damaging critical habitat only apply to habitat in or on a Commonwealth area. There is no penalty for harming critical habitat listed on private or state owned land, rendering the listing legally useless. As a result, there is no meaningful protection under current national environment law for the majority of areas of critical habitat. This in part explains some of the lack of listing on the critical habitat register.

However, it does not explain the complete lack of action on the register over the past 13 years, 10% of species surveyed in this report had both clearly identified areas of critical habitat which occurred wholly or partly on Commonwealth land. This fact would make these species suitable for having at least some, if not all, of their habitat listed on the existing critical habitat register. Yet this is not the case. In nature, threatened species are not concerned by jurisdictional borders and types of land tenure. Under the EPBC Act, environmental impacts and development assessments and approvals are tenure blind, yet the critical habitat register is tenure constrained. The lack of application of critical habitat penalties and enforcement provisions across tenures is a significant flaw in national conservation policy and legislative design. The majority of critical habitat locations lie outside Commonwealth land. This means that in order to achieve effective legal protection for critical habitat, as well as greater public awareness through prominence on a publicly accessible register, the critical habitat provisions are in urgent need of reform and proper effective operation.

Despite the lack of penalty provisions outside of Commonwealth land, there remains a significant community benefit from having transparent and easily accessible listings of critical habitat on the public record. It provides a tool that conservationists can use to educate the public, encourage awareness of threatened species management, and sends an important signal to governments, developers and planners as to which areas are to be avoided.

**Case study — Leadbeater's Possum** The Leadbeater's Possum, the faunal emblem of Victoria, is a small, fast-moving, tree-dwelling marsupial with a distinctive club-shaped tail. The possum was believed extinct until it was rediscovered in 1961. The Leadbeater's lives almost exclusively in the Montane Ash forests of Victoria's Central Highlands. These forests, which stretch east from Melbourne's doorstep, are some of the most carbon-dense on earth and provide essential drinking water for Melbourne and regional Victoria. Leadbeater's Possum numbers have declined 80% since the 1980s, and in 2015 the species was up-listed to critically-endangered – the last step before extinction. The main threat to the survival of this iconic species is the 'ongoing reduction in the extent, quality and connectivity of its habitat'. The key drivers of this habitat loss are severe bushfire and logging, and the subsequent loss of old hollow-bearing trees. While bushfire is a natural process, peer-reviewed science has demonstrated that logging increases the severity of fire in the Leadbeaters' Montane Ash habitat. In 2015, the Federal Environment Minister received important conservation advice from the government's own Threatened Species Scientific Committee (TSSC). The TSSC advised that the 'most effective way to prevent further decline

### **Failure to Account for Climate Change**

The US Endangered Species Act has a broad approach which defines critical habitat to include areas which will be essential for the future conservation of a species. Some species, such as certain plants, may be relatively immobile, whereas others may require the capacity to move relatively rapidly as environmental conditions change. Over the coming decades, Australia will experience the increasing effects of global warming. Species ranges are likely to be dramatically affected as they move to cooler areas as the temperature warms. It is likely, under even optimistic emissions abatement scenarios that suitable habitat ranges for many species will shift significantly. This will also mean that in the future, critical habitat will also shift. Central to adapting to the challenge of climate change will be ensuring our legislative frameworks and conservation interventions are fit for purpose. Moving towards an adaptation focus would require expanding the definition of adaptive management critical habitat to include existing habitat and modelled future habitat as a result of climate change. This is a particularly important inclusion where habitat loss and degradation has strongly influenced a species' decline, has fragmented a species' existing range and has limited a species' capacity to move across the landscape. Likewise, a stronger, broader definition of critical habitat must give significant emphasis to species persistence. This should be evaluated in terms of the extinction risk, population size, and/or number of patches needed to achieve viable populations into the future.

**Case study — Corroboree frog** The Southern Corroboree Frog is a spectacularly patterned black and yellow amphibian which lives in the Australian Alps. It has experienced substantial decline as a result of introduced Chytrid fungus and other threats and is now listed as critically endangered. The species is thought to be highly susceptible to climate change, due to its limited capacity for long migration and the fact it already occupies some of the highest altitude areas in Australia. In many cases there is simply nowhere higher for the Corroboree frog to go.

To provide adequate critical habitat protection now and into the future, range shifts and contractions must be taken into account in defining and identifying critical habitat for this species. The incorporation of data on both current and future habitat is essential to ensure the accuracy of critical habitat selection, particularly in the context of global warming

### **Critical Habitat and other protection measures**

Australia's National Reserve System (NRS), which is made up of public, private and Indigenous protected areas, is the backbone of our conservation estate and efforts. Australia is fortunate to have an abundance of intact nature and has enjoyed significant growth of the NRS, especially of highly protected areas, at least up until 2013. There are a range of mechanisms available for conserving threatened species. Large-scale protected areas are the preferred tool for safeguarding big, intact ecosystems important for biodiversity, such as the Mountain Ash forests of the Central Highlands of Victoria. Yet Australia's capacity to protect its threatened species solely through the protected-area system is limited. Supporting legal frameworks and environmental impact assessment regimes are also vital.

A 2011 study highlighted significant gaps in the protected area estate when it came to threatened species conservation. Specifically, it found that 166 (12.6%) threatened species occurred entirely outside protected areas and target levels of protection were met for only 259 (19.6%) species.<sup>24</sup> Critical habitat designation can strengthen legal protection for threatened species. As a regulatory mechanism, it can supplement and support existing conservation tools, such as protected areas. Critical habitat designation is particularly useful because it can limit the loss of habitat outside of formal protected areas.

Alongside critical habitat designation, binding directives can guide decision making regarding the loss of habitat for threatened species. For example, biodiversity offsets are too often used to excuse the destruction of irreplaceable habitat for threatened species. Critical habitat designation and binding directives can make clear the limits to biodiversity trade-offs that occur routinely in regulatory decision making under the EPBC Act

## **Fixing the System to Protect Critical Habitat**

The effective protection of critical habitat for threatened species requires more than passing mentions in recovery plans, threat abatement plans or conservation advice. It also requires that more than five places are listed on a reformed critical habitat register that can offer legal protection across multiple tenures. Subsuming critical habitat into existing, similarly inadequate EPBC Act protection is also not an alternative. It will only reduce visibility and ensure our threatened wildlife remains on its existing path to extinction.

The existing legislation fails on a number of fronts. It fails in building public, industry and government awareness of critical habitat areas. It is subject to the political whims of ministers who are afforded broad ministerial discretion and may be subject to the pull of vested industry interests. Our current law provides patently inadequate legal protection to prevent the destruction of critical habitat. Addressing these issues requires clear legal protection that places prescriptive limits on the destruction and loss of critical habitat. The EPBC Act, Australia's key piece of environmental law, has fundamentally failed at its task of protecting biodiversity. A new generation of environmental law that protects Australia's vanishing threatened species is desperately needed.

A key to improving the outcomes for threatened species will be ensuring there is an effective critical habitat register which provides effective legal protection and increased public awareness Australia, as one of the few megadiverse developed nations in the world, must move from a global laggard to a leader when it comes to biodiversity conservation. Failure to change the trajectory of our current extinction crisis will spell disaster for our iconic wildlife, leave future generations poorer and leave Australia as a global embarrassment. Key reforms are needed to effectively protect critical habitat and our nationally threatened species.

### **Recommendations:**

1. Establish new national environmental laws which include strong provisions to protect critical habitats and climate refuge for species.
2. Establish a national sustainability commission to set national threatened species recovery standards, including working with the Threatened Species Scientific Committee to identify and list critical habitat.
3. Establish a new national critical habitat register which applies across all land tenures, with mandatory consultation and education programs.
4. Ensure the registering of critical habitat occurs within 12 months of a species being added to the national threatened species list.
5. Adopt a persistence approach to critical habitat listing, which accounts for climate change adaptation and impacts.
6. Establish an independent national Environmental Protection Agency that would be bound by conservation directives, critical habitat designations and recovery plans.
7. Establish a \$200 million per annum national threatened species fund to directly implement threatened species recovery plans.

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