

Abandoned

Australia's forest wildlife in crisis

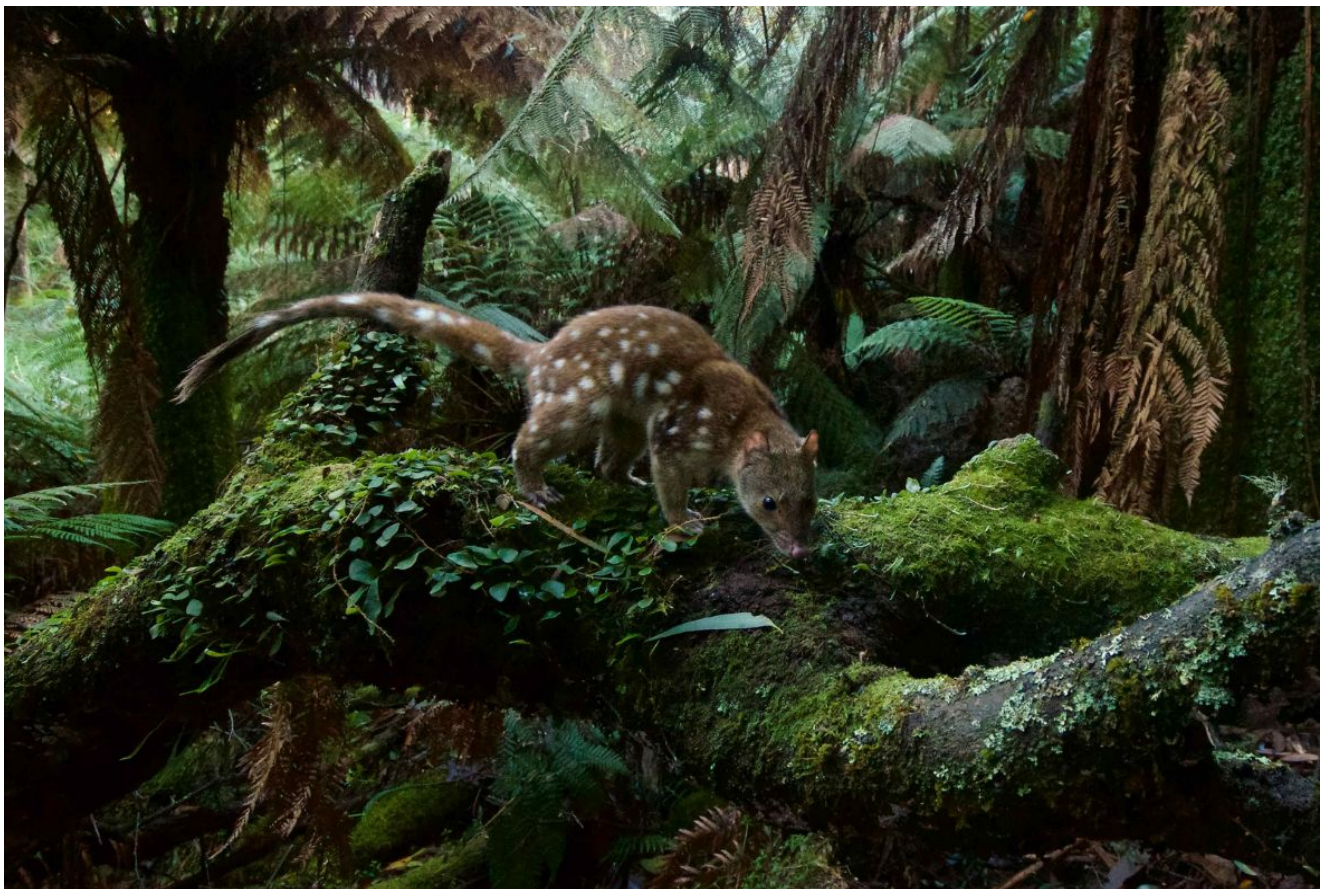


Photo: Endangered Spotted-tailed Quoll by award-winning nature photographer [David Gallan](#). Used with permission.

March 2019 (Updated July 2019)

Contents

Part 1: A sample of threatened forest-dwelling fauna species at risk from logging	3
Comparison between ‘RFA forests’ and habitat for critically endangered species	5
Regent Honeyeater (NSW)	6
Western Ringtail Possum (WA)	7
Swift Parrot (NSW/Tas/Vic)	8
Leadbeater’s Possum (Vic)	9
Barred Galaxias (Vic)	10
Giant Freshwater Crayfish (Tas)	11
Koala (NSW/Vic)	12
Forest Red-tailed Black Cockatoo (WA)	13
Giant Barred Frog (NSW)	14
Numbat (WA)	15
Spotted-tailed Quoll (NSW/Vic)	16
Greater Glider (NSW/Vic)	17
Large Forest Owls: Masked Owl, Sooty Owl, Powerful Owl (NSW/Tas/Vic)	18
Further threatened forest-dwelling, logging-impacted species	20
Part 2: Summary of new laws and proposals for new protected areas	25
Part 3: Case studies: Threatened species under new RFAs and accredited logging plans	29
3.1 NSW ‘Integrated Forestry Operations Approvals’ (IFOAs)	30
3.2 Victoria: State of the Forests Report documents species decline	31
3.3 Tasmania	31
Part 4: Relevant court cases and rulings and their implications	32
4.1 Enforcement of EPBC Act in relation to threatened species	33
Appendix 1: The total number of EPBC-listed, forest-dwelling species in Australia	34
Appendix 2: Key threatening processes	35
Appendix 3: FSC HCV categories	37
Acknowledgements and selected references	38

The Wilderness Society acknowledges the First Nations peoples of the lands and seas on which we work across Australia, and recognises their continuing connection to land, water and community. We pay our respects to Elders past, present and emerging.

Part 1: Threatened forest-dwelling fauna species at risk from logging across Australia

This report identifies **48 Federally-listed threatened forest-dwelling vertebrate fauna species**¹ impacted by logging operations, including logging-associated roading and burning, across Australia's 11 Regional Forest Agreement (RFA) regions (see map below).

Under current Federal laws and intergovernmental agreements (i.e. RFAs) these species are being pushed relentlessly and knowingly beyond population decline and shrinking distribution towards extinction in the wild.

Four of the forest species (Leadbeater's Possum; Swift Parrot; Western Ringtail Possum; Regent Honeyeater) have been identified as being amongst the 20 bird and 20 mammal species most likely to become extinct in the next 20 years (National Threatened Species Recovery Hub, 2018).

The original [RFAs](#) were signed between the Federal Government and state governments 20 years ago. Under the RFAs, the Federal Government formally removed itself from any ongoing involvement in the assessment and approval of forest logging operations, via the so-called 'RFA exemption' clauses incorporated into the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Regional Forest Agreement Act 2002* (RFA Act).

Although the RFAs were supposed to 'balance' the needs of forest ecosystems and threatened species with the demands of the logging industry, the reality over the past 20 years has been that more and more forest-dwelling species have been newly listed as threatened or uplisted to a higher threat category—which was never an RFA outcome suggested or agreed to by anyone.

Evidence

Forest wildlife species have undergone serious decline since the RFAs commenced:

- **12** forest vertebrate fauna species have been up-listed to the 'Endangered' or 'Critically Endangered' categories since RFAs commenced;
- **No** threatened forest vertebrate species has been down-listed to a lower category of threat under the EPBC Act since the RFAs commenced;
- **More than 1 in 4** Federally-listed forest dependent species that were listed when the RFAs were signed are closer to extinction now than they were 20 years ago;
- **15** forest vertebrate fauna species have been listed for the first time as threatened in the 20 years since RFAs were commenced;
- **24** forest vertebrate fauna species in total are now listed as Critically Endangered or Endangered;
- Logging operations have been officially recognised (e.g. in [EPBC Act Recovery Plans](#)) as a threat to **20 of the 24** Critically Endangered or Endangered species;
- The EPBC Act list now has a **record high number** of threatened forest-dwelling fauna (vertebrate/invertebrate);
- **15** listed forest-dwelling fauna species have no EPBC Act Recovery Plan.
- Where such recovery plans do exist they are often **not implemented**, because of a lack of legal enforceability, lack of political will, agency resistance and a chronic lack of funding.

The failure of the RFAs has been further demonstrated via investigative reports, court cases and proven findings of widespread, serious and systemic breaches of the RFA-accredited logging laws, plans and prescriptions which are supposed to protect threatened species, across the 11 RFA regions.²

¹ This report also includes one of the **12** EPBC-listed forest-dwelling invertebrate species: the Giant Freshwater Crayfish.

² A sample of reports in relation to non-compliance with State forest management plans and RFAs:

<https://faunaandfloraresearchcollective.wordpress.com/>

https://d3n8a8pro7vhmx.cloudfront.net/ncec/pages/66/attachments/original/1537085676/Protecting_Federally_Threatened_Species_in_NSW.pdf?1537085676 <https://eastgippsland.net.au/topic/brown-mountain/>

http://www.geco.org.au/report_exposes_labor_s Lawless_logging

The RFAs and other relevant forest management processes and plans have also comprehensively failed to address the compounding impacts of climate change, including impacts on threatened species. As six leading forest ecologists stated in their 2018 submission to the [Senate Inquiry into Australia's Faunal Extinction Crisis](#),

RFAs do not adequately protect biodiversity, threatened species, or threatened ecosystems. They also have failed to maintain key ecosystem processes on which threatened species depend. RFAs are based on outdated information and are characterised by poor governance. An assessment of all RFAs completed for this submission (and a published scientific paper on which part of this submission is based; see Lindenmayer et al., 2018) showed that none of the 5-year performance reviews for RFAs had been completed on time, with many being years behind schedule or incomplete. This is a failure of compliance and means that new information on key topics such as the effects of climate change on forests, the discovery of new populations of threatened species, or substantial new declines in particular species of conservation concern are not accommodated in the RFA process. Consequently, appropriate changes in forest management are not made despite mounting evidence for their need.³

As an example of the failure of the RFAs to hold state governments to science-based species protection requirements, the NSW Government is planning to intensify logging, remap old growth forest (to make it available for logging) and reduce wildlife habitat protections under the state's new 'Integrated Forestry Operations Approvals' (IFOAs)—in spite of clear scientific evidence that such changes will have detrimental impacts on threatened species.⁴

In Victoria, the failure of the RFAs is demonstrated by the fact that, rather than roll the RFAs over for another twenty years, the state government has elected to extend them for only two years, and is currently engaged in a process of reviewing the RFAs and considering how to manage forests for the highest use and best value in future.

Whilst logging operations, including logging-associated roading and burning, are not the only threats to the forest fauna species covered in this report, it is important to note that:

- logging and logging-associated roading and burning also facilitate and exacerbate **9 out of 11** other documented "Threat Categories" (see *Australia's State of the Forests Report*, Commonwealth, 2018) such as weed invasion; introduction and spread of disease, e.g. *phytophthora* dieback; and predation by foxes and cats;
- logging and logging-associated roading and burning are one key threat that could be removed almost immediately, whereas other threats such as climate change or existing feral species invasion will take decades to reverse.

Our forests and their threatened species cannot survive RFAs of any length that continue to prioritise logging over all other values and uses of forests. Protecting these threatened species' habitats from logging and logging-associated roading and burning is a prerequisite to reverse declines and provide increased suitable habitat in the long-term.

The Federal Government and Environment Minister must act urgently to fully implement science-based threatened species recovery plans (or where no such plans exist, cause them to be prepared and implemented). Any logging operations likely to have a significant impact on these species and their habitat should be 'called in' for formal Federal environmental impact assessment. Any impediment to such assessment through the 'RFA exemption' under the EPBC Act and RFA Act should be removed.

MOST CRITICALLY, THE NEXT AUSTRALIAN GOVERNMENT MUST COMMIT TO A POLICY THAT NO MORE OF OUR UNIQUE WILDLIFE SPECIES WILL BE ALLOWED TO GO EXTINCT. IT MUST ENSURE, BACKED BY THE NECESSARY LAWS AND RESOURCES, THAT THIS POLICY IS FULFILLED.

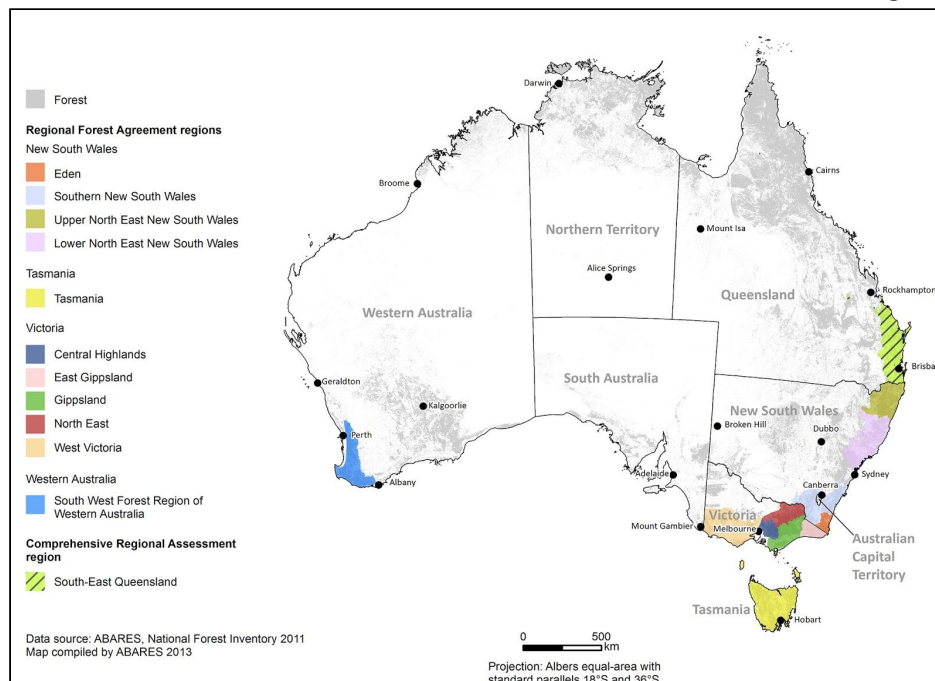
³ Professor David Lindenmayer AO; Dr. Matthew H. Webb; Dr Dejan Stojanovic; Professor Robert Heinsohn; David Blair; Lachlan McBurney (2018). Submission #28 to the Senate Faunal Extinction Crisis Inquiry. Fenner School of Environment and Society, ANU, Canberra.

⁴ <https://www.nrc.nsw.gov.au/ifoas>

Comparison between ‘RFA forests’ and habitat for critically endangered species

Australia’s 10 ‘Regional Forest Agreements’

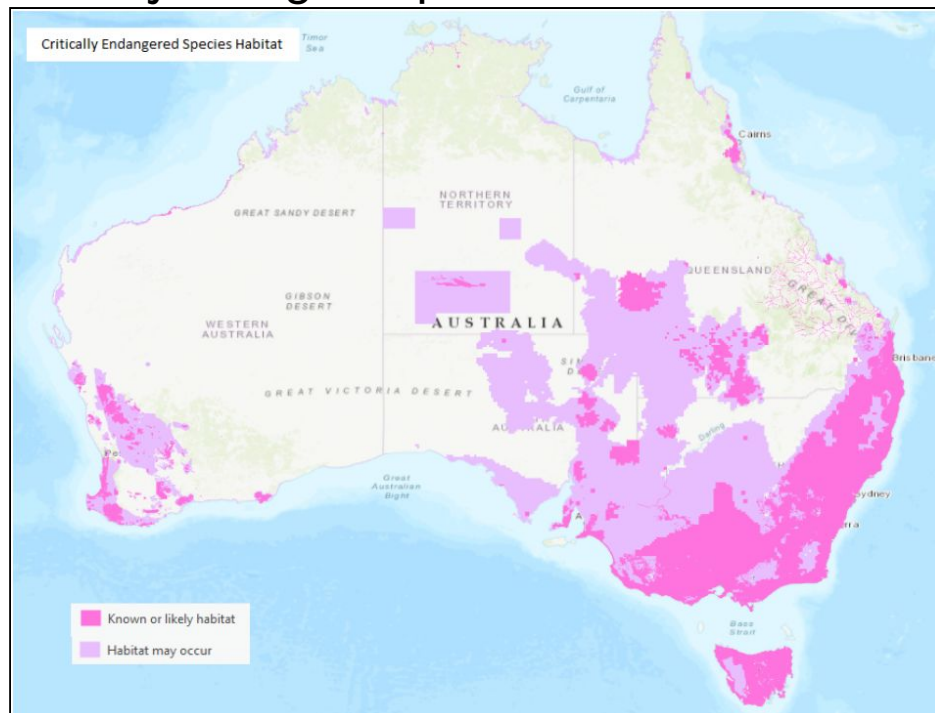
(Note: South East Qld RFA never finalised; one RFA covers two NSW regions—Upper and Lower NE.)



[Map: Dept. of Agriculture](#)

New RFAs have recently been agreed between governments for NSW and Tasmania. At the time of publication the WA Government is considering renewing its RFA (expires May 2019) while Victoria has established a two year comprehensive review and ‘modernisation’ process prior to any renewal.

Critically endangered species (flora and fauna) habitat



The two maps show the close correlation between known and likely critical habitat for Critically Endangered species and the areas covered by Australia’s 11 Regional Forest Agreements.

Map 2 data source: Australia—Species of National Environmental Significance Database (Public Grids) May 2018 © Commonwealth of Australia (Department of the Environment and Energy).

Regent Honeyeater (NSW)

Anthochaera phrygia

Conservation status: **CRITICALLY ENDANGERED** (EPBC Act)
Uplisted since RFAs commenced? **YES**; in 2015
EPBC Act recovery plan? **YES** (2016)

NUMBER 7 ON THE LIST OF 20 AUSTRALIAN BIRD SPECIES MOST AT RISK OF EXTINCTION IN NEXT 20 YEARS

(National Threatened Species Recovery Hub, 2018)

“As at 2010, the **total population size** is estimated at **350–400** mature individuals... which represents a significant decline over the last 15–20 years.”



Threats: “The decline of the Regent Honeyeater is thought to be mainly due to the clearing, fragmentation and degradation of its habitat (Garnett et al., 2011). The species relies on a range of different food resources, and is particularly vulnerable to the **removal of large mature trees** which are important feeding and breeding habitat (Franklin et al., 1989; Oliver, 2000). Woodlands have been widely cleared for agriculture and development, **or replaced by silviculture [i.e. logging]**, resulting in a fragmented landscape. Fragmentation exposes woodlands to increased degradation. Many remnant areas are in poor health and are **continuing to be degraded by the removal of trees for timber and firewood**, invasive weeds, inappropriate fire regimes, and grazing by livestock and rabbits which prevent regeneration... **Public and private forestry harvesting operations are potential threats to the Regent Honeyeater**. The retention of nesting areas and a suitable number of large mature trees for nectar production and to provide foraging habitat is required.”

www.environment.gov.au/system/files/resources/286c0b52-815e-4a6c-9d55-8498c174a057/files/national-recovery-plan-regent-honeyeater.pdf

www.environment.gov.au/biodiversity/threatened/species/pubs/82338-conservation-advice.pdf

The Regent Honeyeater is a priority species under the Australian Government’s Threatened Species Strategy and the recovery plan for the [Regent Honeyeater](#) identifies that **all breeding and foraging habitat as critical to its survival**. Despite this, its habitat continues to be lost, degraded and fragmented by logging and other disturbances.

Map 1: Sample of planned logging areas 2019–2020 that are likely to impact this species (NSW).

Map 2: [Distribution](#) of Regent Honeyeater with critical breeding areas in green and blue shading.



Full NSW planned logging maps: <https://planportal.fcnsw.net/>

Western Ringtail Possum (WA)

ngwayir or *Pseudocheirus occidentalis*

Conservation status: **CRITICALLY ENDANGERED** (EPBC Act)

Uplisted since RFAs commenced? **YES**; uplisted from 'Vulnerable' to 'Endangered' to 'Critically endangered' since the WA RFA was signed in 1998

EPBC Act recovery plan? **YES**

NUMBER 11 ON THE LIST OF 20 AUSTRALIAN MAMMALS MOST LIKELY TO BECOME EXTINCT IN NEXT 20 YEARS

(National Threatened Species Recovery Hub, 2018)



The Western Ringtail Possum (WRP) has gone from 'Vulnerable' to 'Endangered' to '**Critically Endangered**' since the WA RFA was signed. It is at serious risk of extinction in the wild. There are very important populations still found in forests that are being logged or are planned to be logged—i.e., Upper Warren, Preston-Blackwood and west Manjimup areas (See yellow area in map below).

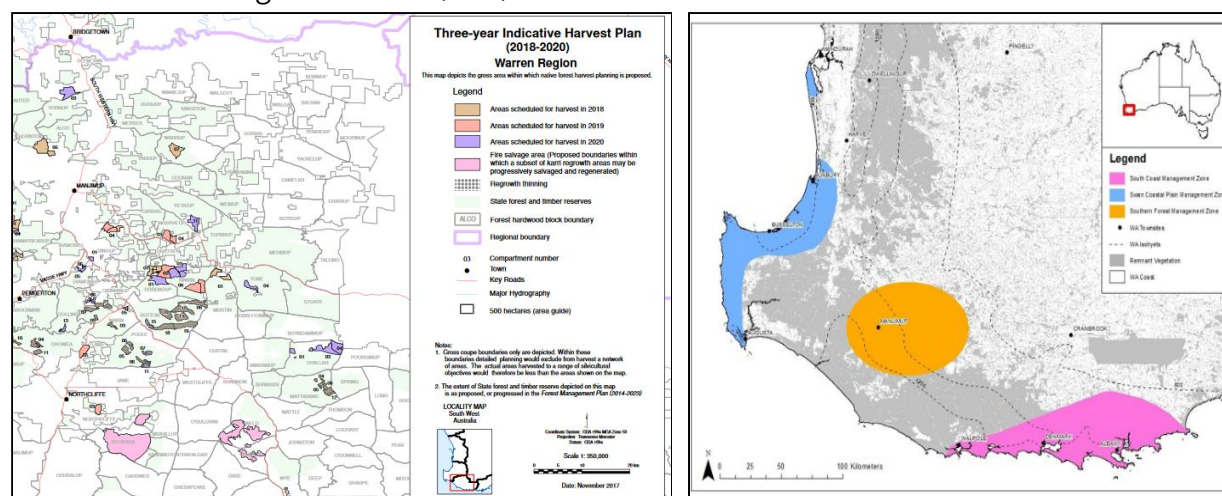
Threats: **Logging, past, present and future:** WRPs are more abundant in unlogged forest or where logging has been least intense; **logging leads to local mortality including via increased feral cat predation.** Ongoing regulation of logging activities is required in multiple use areas to management this potential threat. **IMPACT: High—logging can halve the productive output of females...** Barbara Jones' expert opinion of the inferred/suspected numbers of mature individuals for 2006 (18,000) and 2015 (3400) indicate a population size

reduction of **80% or more in the past 10 years.**"

www.environment.gov.au/biodiversity/threatened/species/pubs/25911-conservation-advice-11052018.pdf

Map 1: Sample of planned logging areas 2019-2020 that are likely to impact this species (WA).

Map 2 : Key 'management zones' for Western Ringtail Possums (WA Dept. Parks and Wildlife. Draft Recovery Plan for Western Ringtail Possums (2014).



Full South West WA planned logging maps:

www.dpaw.wa.gov.au/images/documents/conservation-management/forests/forest-produce/warren_region_map_2018-2020.pdf

www.dpaw.wa.gov.au/management/forests/forest-produce/175-planning-for-timber-harvesting

Swift Parrot (NSW/Tas/Vic)

Lathamus discolor

Conservation status: **CRITICALLY ENDANGERED** (EPBC Act)
Uplisted since RFAs commenced? **YES**, in 2015
EPBC Act recovery plan? **YES**; 2011—under review in 2019

NUMBER **13** ON THE LIST OF 20 AUSTRALIAN BIRD SPECIES MOST AT RISK OF EXTINCTION IN NEXT 20 YEARS
(National Threatened Species Recovery Hub, 2018)



Threats: “The major threats to the survival of the Swift Parrot are the ongoing loss of breeding and foraging habitat in Tasmania **through forestry [logging] operations** and land clearing, and predation by Sugar Gliders of nestlings and sitting females... Forestry operations and conversion of native forest to tree plantations over the past 30 years has reduced the amount of available Swift Parrot nesting and foraging habitat... **Recent estimates of clearing in the identified Southern Forests Swift Parrot Important Breeding Area in Tasmania suggests that between 1997 and 2016 approximately 33% of all eucalypt forest was lost through conversion of native forest to plantation or disturbed through native forest harvesting, and 23% of the identified old growth forest was lost** (Webb et al. 2018). As nesting hollows generally only occur in trees older than about 100 years of age, and larger trees have proportionally more nectar and food resources, the ongoing logging of breeding habitat remains a threat to the species’ persistence in the wild... **Logging of foraging habitat on the Australian mainland also remains a threat.** The

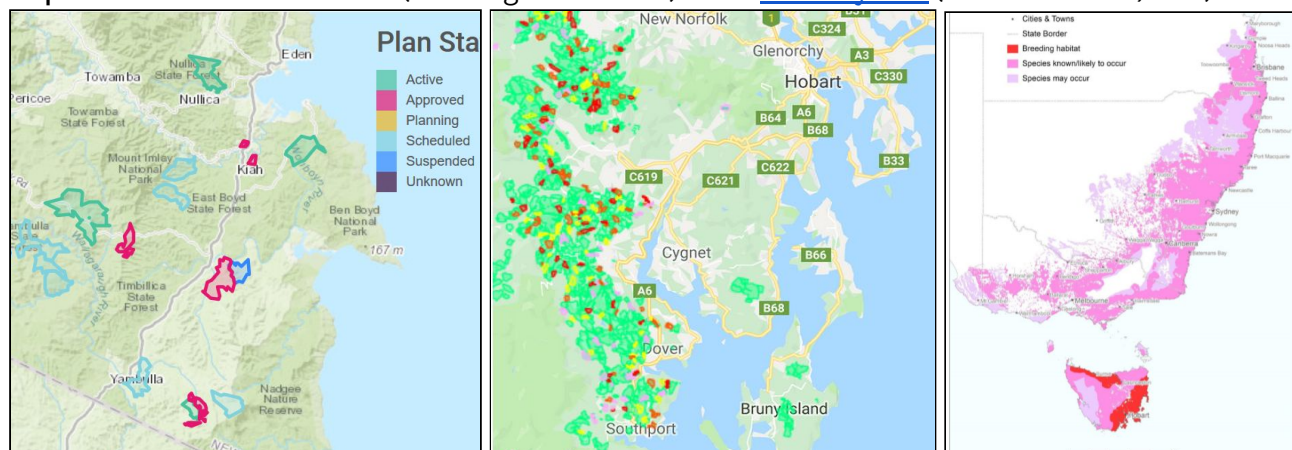
extent of forest loss over Swift Parrot foraging habitat on the mainland **has not been quantified and the impacts from commercial logging operations on the mainland remain uncertain.”**

www.environment.gov.au/system/files/consultations/00802df7-5a57-4e78-a7e1-261d6d444ba2/files/draft-recovery-plan-swift-parrot.pdf

Swift Parrot is a priority species under the national Threatened Species Strategy. The 2011 national [recovery plan](#) for the Swift Parrot proposes the retention of all trees over 60cm diameter. **This was never implemented and the recommendation has been removed from the [new draft recovery plan](#) released in early 2019.** In June 2019 an important habitat for Swift Parrots, forests and woodlands dominated by Black Gum (*Eucalyptus ovata*) was EPBC-listed as a Critically Endangered ecological community.

Maps 1-2: Sample of planned logging areas 2019-2020 likely to impact this species (NSW & Tas).

Map 3: Swift Parrot distribution (breeding areas in red): Draft [Recovery Plan](#) (Commonwealth, 2019).



Full logging plan maps:

Map 1: NSW: <https://planportal.fcns.wa.gov.au/>

Map 2: TAS: www.sttas.com.au/forest-operations-management/interactive-map-viewer

Leadbeater's Possum (Vic)

wollert or *Gymnobelideus leadbeateri*

Conservation status: **CRITICALLY ENDANGERED** (EPBC Act)
Uplisted since RFAs commenced? **YES**; in 2015
EPBC Act recovery plan? **YES**; in March 2019 a revised plan awaits release

NUMBER 7 ON THE LIST OF 20 AUSTRALIAN MAMMALS MOST LIKELY TO BECOME EXTINCT IN NEXT 20 YEARS
(National Threatened Species Recovery Hub, 2018)



Threats: Logging “**reduces habitat suitability, extent and connectivity in Leadbeater's Possums' montane ash forest environments...** Leadbeater's Possums do not occur in recently clear-felled areas... On average approximately 800ha of ash forest is currently harvested per year within the range of Leadbeater's Possum.” ([EPBC Draft recovery plan, 2016](#))

In 2015, then Federal Environment Minister Hunt, listed the Leadbeater's Possum as Critically Endangered. [The advice of the Threatened Species Scientific Committee](#), approved by Minister Hunt, concluded that: “The most effective way to prevent further decline and rebuild the population of Leadbeater's Possum is to **cease timber harvesting** [logging] within montane ash forests of the Central Highlands.”

Minister Hunt [prioritised the species for 'emergency intervention'](#), and promised a revised recovery plan for the species within twelve months.

In 2009 “severe bushfires in large parts of the Central Highlands [...] substantially reduced the overall population and the available habitat for Leadbeater's Possum.” (Leadbeater's [recovery plan review 2016](#))

An increased survey effort arising from policies implemented out of the Victorian Government Leadbeater's Possum Advisory Group (LPAG) [recommendations](#) resulted in a higher number of sightings of the species. A 2017 review of the effectiveness of the LPAG settings confirmed that despite the increased sightings, uncertainty continued for the species: “The Leadbeater's Possum **remains at a high risk of extinction** until 2050-70”, because “[f]orest management activities including timber harvesting [logging], regeneration burning and the construction and maintenance of roads result in the loss and fragmentation of habitat with flow-on effects to resident colonies of Leadbeater's Possum.”

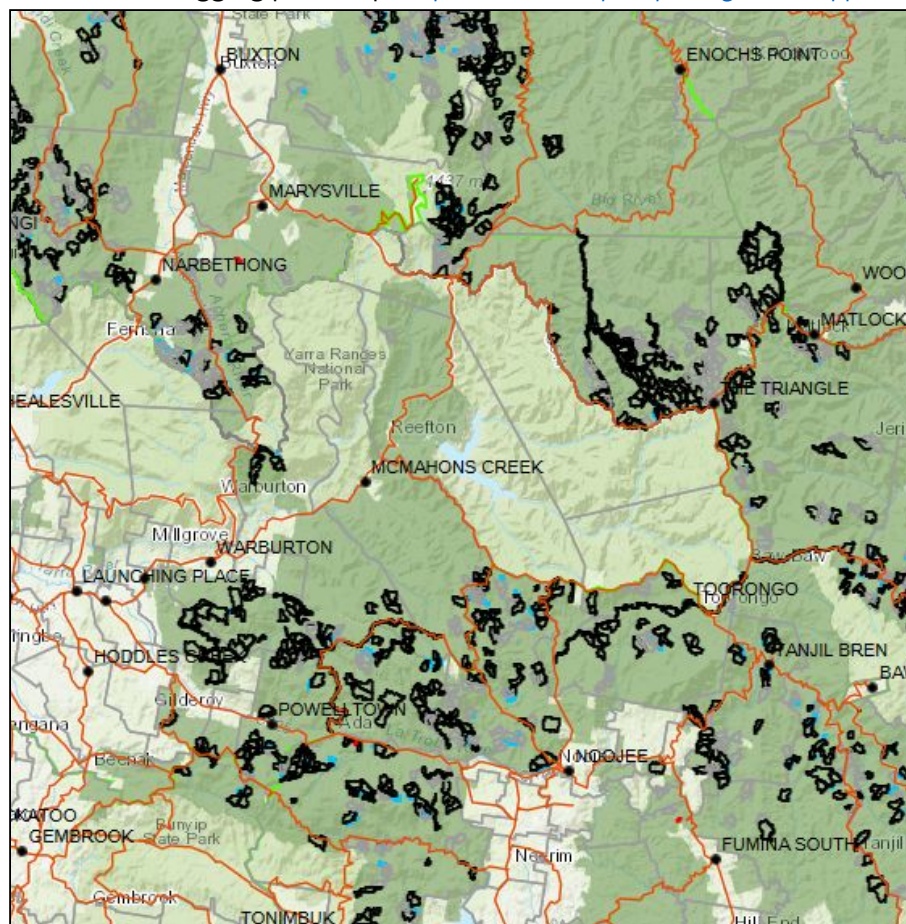
Meanwhile, also in 2017, [application was made to downlist the species](#), with then [Agriculture Minister Joyce](#) writing to the then Environment Minister Frydenberg [requesting that data collected by the Victorian State Government logging agency be used to review the status of the Leadbeater's Possum](#). Minister Frydenberg [agreed to reassess the conservation status](#) of the Leadbeater's Possum; the review was initially [fast-tracked, but has since been delayed a number of times](#).

In July 2018, a [draft consultation document](#) was released by the Commonwealth, noting that current and future predicted declines in the Leadbeater's Possum population meet the threshold for a critically endangered listing. The advice was that, based on the data received by the Threatened Species Scientific Committee at that stage, “Leadbeater's Possum appears to have met sufficient elements of criterion 1A4(b) to be **eligible for the Critically Endangered category**.”

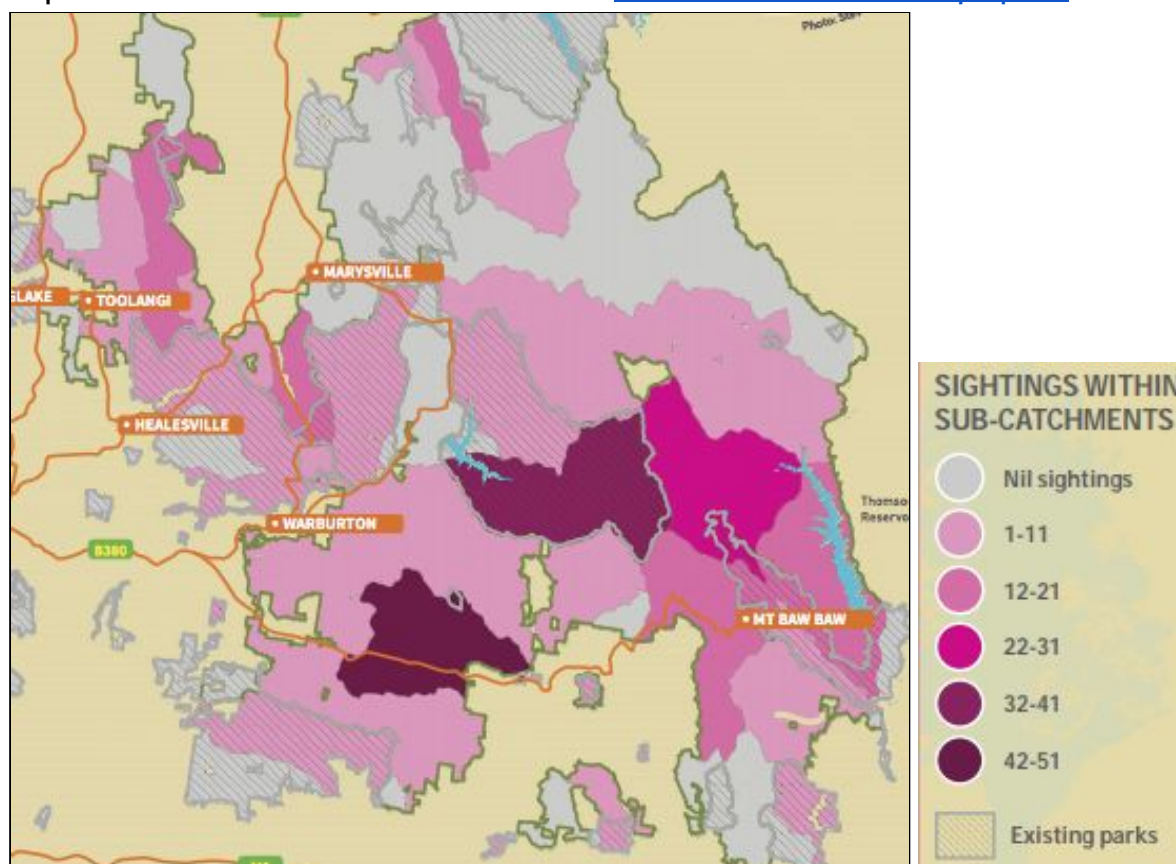
A final decision as to the species' conservation status was announced by Federal Environment Minister Sussan Ley in June 2019: “Retained as Critically Endangered”.

Meanwhile, logging of the Leadbeater's habitat continues regardless of independent expert scientific advice. (See over)

Map 1: Sample of planned logging areas that are likely to impact this species (Central Highlands, Vic). Full Victorian logging plan map: <http://vicforeststrp.maps.arcgis.com/apps/PublicInformation/index.html>



Map 2: Distribution of Leadbeater's Possum from [Great Forest National Park proposal](#)



Barred Galaxias (Vic)

Galaxias fuscus

Conservation status: **CRITICALLY ENDANGERED** (Vic); **ENDANGERED** (EPBC Act)

Uplisted since RFA commenced? **NO**

EPBC Act recovery plan? **YES**



The Barred Galaxias is found only in eastern Victoria. It is restricted to one river system, and is known to exist in only 21 locations in this system, in small to medium sized rivers and creeks that extend into upper headwater tributaries. One more population was recently discovered in the Castella forest of Toolangi.

Threats: "Deliberate malicious introduction of trout by humans into Barred Galaxias streams has also occurred at sites that are relatively easily accessible. **This risk is significantly increased when new access tracks are made into previously inaccessible areas of catchments (e.g. during timber harvesting operations), or where previously existing, though overgrown, tracks are rehabilitated (e.g. for timber harvesting, general**

access, fire-fighting or back burning operations). Consequently, increased access to remote catchments/streams containing Barred Galaxias due to improved or new roads or tracks also pose a significant threat to this species."

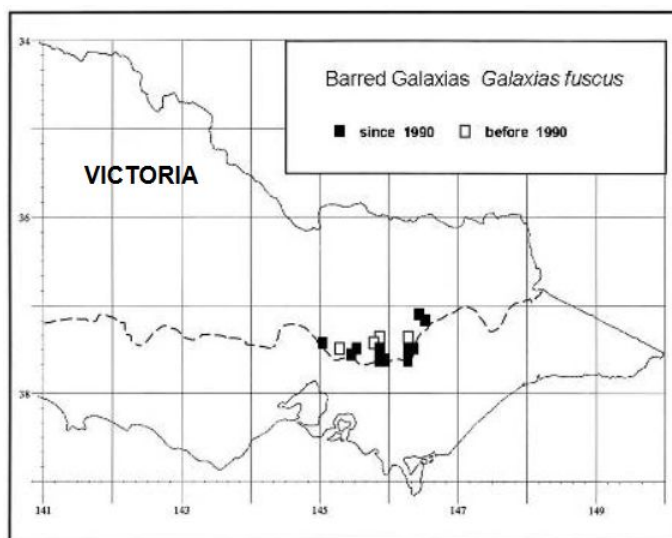
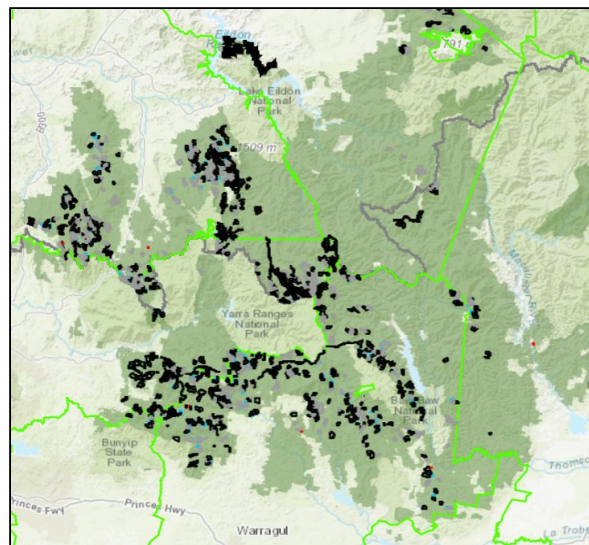
www.environment.gov.au/system/files/resources/e861bb85-81be-430b-b17a-f26b00b53b04/files/barred-galaxias.pdf

Increased sedimentation directly kills the fish, reduces food, spawning and habitat resources for the fish, and exacerbates the impact of low water flows. Experts advise that, "[a]ll forested catchments in eastern Victoria should therefore be managed according to the precautionary principle to protect the condition and habitat of known and potential threatened galaxias populations." (Forest Industry Taskforce, Summary Report on Threatened Species, March 2017)

Logging recently commenced in known Galaxias habitat in the Castella forests in Toolangi. Despite the requirement in the recovery plan for any new Galaxias populations to be monitored, a new population recorded in this forest, in a logging coupe, has not been monitored. It represents 5% of the known population of this species. Logging continues in the area.

Map 1: Sample of planned logging areas that are likely to impact this species (Central Highlands, Vic).

Map 2: Distribution of Barred Galaxias (from: National Recovery Plan).



Full Victorian logging plan map: <http://vicforestsrp.maps.arcgis.com/apps/PublicInformation/index.html>

Giant Freshwater Crayfish (Tas)

tayatea or *Astacopsis gouldi*

Conservation status: **VULNERABLE** (EPBC Act); **ENDANGERED** (IUCN Red List of Threatened Species)
Uplisted since RFA commenced? **No**
EPBC Act recovery plan? **YES**



Threats: “The Giant Freshwater Crayfish is endemic to rivers of northern Tasmania. This species requires well-shaded streams that have good water quality, low sediment levels, snags, pools and undercut banks (Gowns 1995; Hamr 1990a, b; Lynch 1967). The Giant Freshwater Crayfish requires a stable thermal regime of relatively low water temperature (TSS 2006).

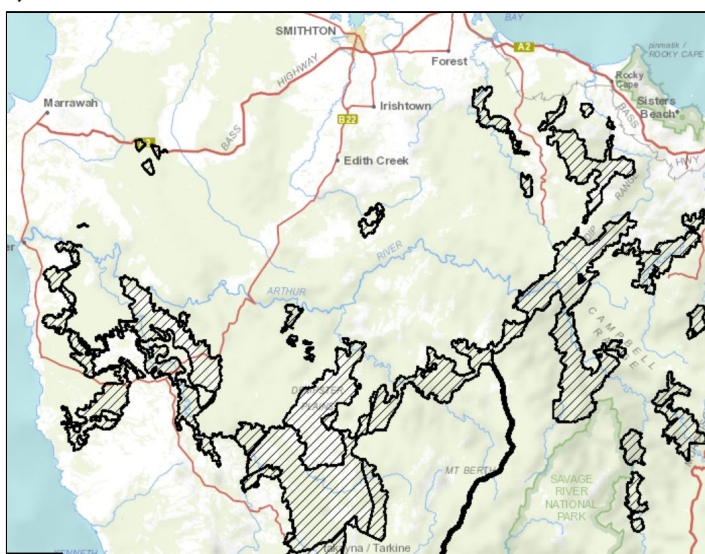
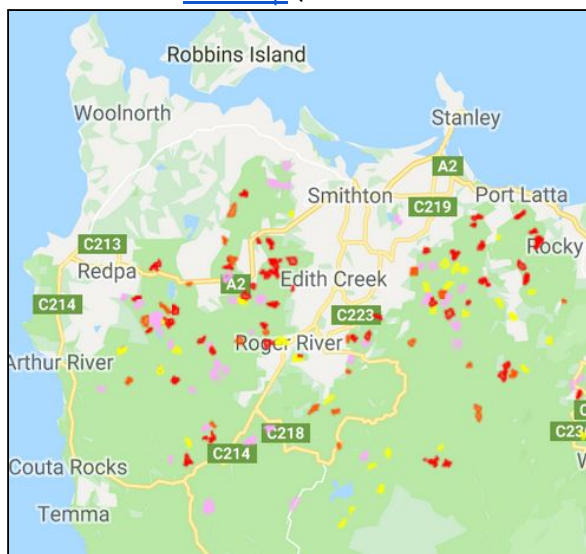
“Giant Freshwater Crayfish populations have a restricted distribution and have experienced reductions in the number of mature individuals within a three generation period, and also decreases in the extent of occurrence and area and quality of habitat (TSS 2006), all of which present significant challenges for their recovery and exert strong pressures on their survival in the wild.

“In forestry [logging] areas, riparian and aquatic habitats are affected by activities such as road construction, logging and the establishment and subsequent harvesting of plantation timber (TSS 2006). Effects include loss of canopy cover, increased runoff, sedimentation, and changes in hydrology (TSS 2006). In situations where streamside vegetation is removed within clear-cutting forestry operations impacts can include changes to stream flows, geomorphology, nutrient dynamics, carbon budgets and impacts to in-stream habitat (Thompson et al. 2009).”

www.environment.gov.au/system/files/resources/fc6f3cee-8f67-4211-942d-3024f78006bf/files/recovery-plan-giant-freshwater-crayfish.pdf

Map 1: Sample of planned logging areas 2019-2022 in NW Tasmania likely to impact this species.

Map 2: ‘Future Potential Production Forest’ reserves in NW Tasmania that could be opened for logging in 2020: Source—[LISTmap](#) (Government of Tasmania).



Full Tasmanian logging plan map: www.sttas.com.au/forest-operations-management/interactive-map-viewer

Koala (NSW/Vic)

Karbor, Koolah, Kur-bo-roo or *Phascolarctos cinereus*

Conservation status: **VULNERABLE** (EPBC Act)

Uplisted since RFA commenced? **YES**; in 2011/12

EPBC Act recovery plan? **NO**; "recovery plan required"— [Cwth Dept of Environment](#)



Threats: The Koala is listed nationally as Vulnerable, yet the recovery plan due to commence in 2014 **has yet to be prepared**. Both the Commonwealth's Conservation and Management Strategy and NSW recovery plan have effectively expired, though their thrust for both public and private lands is to identify and protect important habitat areas, identify improved and standardised survey methods, and monitor and review the effectiveness of mitigation measures.

The current Koala prescriptions for public lands require the identification and exclusion from logging of Koala High Use Areas, and the retention of 5 Koala feed trees per hectare in "intermediate use" habitat. In practice, few areas are identified as Koala High Use Areas, with only some 200 hectares identified in 15 years... **Under the new NE NSW Coastal IFOA there will be no requirement to search for Koalas ahead of logging to identify Koala High Use Areas or even to assess trees for use**

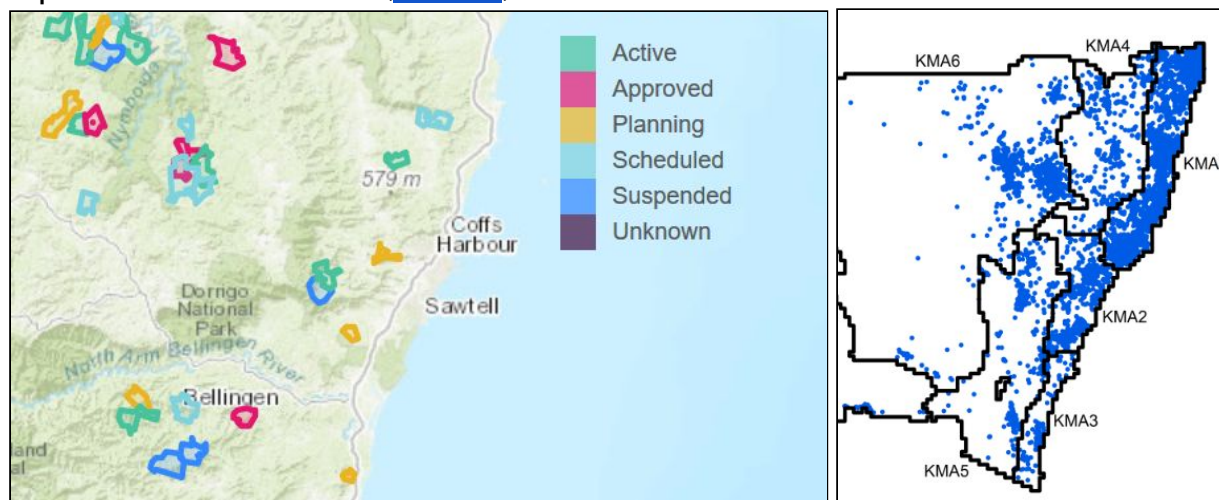
by Koalas when identifying feed trees to be retained. (Pugh, D. 2018)

The new 'intensive harvesting zone' on the NSW north coast contains **40% of mapped high quality Koala habitat in state forests on the NSW north coast**. A March 2019 report by the North East Forest Alliance, [Forestry Corporation Logging of OEH Koala Hubs](#), found;

"This review found that of the mapped Koala Hubs on State forests in north-east NSW, 2,546ha has been logged over the 4 year assessment period 2015-2018, which is an average of 636ha logged per annum within Koala Hubs... It is essential for the future of Koalas that a moratorium be placed on all remaining OEH Koala Hubs on State Forests, along with potential habitat within one kilometre, while further ground based assessments are undertaken to delineate the full extent these "highly significant" resident populations which, based on current records, are the highest priority for protection on public lands."

Map 1: Sample of the planned NE NSW logging areas 2019-2020 likely to impact this species.

Map 2: Koala distribution NSW ([EPA NSW](#)).



Full NSW logging plan maps (NSW): <https://planportal.fcns.wa.gov.au/>

Forest Red-tailed Black Cockatoo (WA)

karrak or *Calyptorhynchus banksia naso*

Conservation status: **VULNERABLE**

Uplisted since RFA commenced? **YES**; in 2008

EPBC Act recovery plan? **YES**



First listed as ‘vulnerable’ in **2008**—ten years into WA RFA. For reasons discussed below and in the literature, the ACTUAL conservation status of the Forest Red-tailed Black Cockatoo is likely far more serious than its current listing status would suggest.

Threats: “Habitat loss for agriculture, **timber harvesting, woodchipping** and mining appears to be the principal cause of the historical decline of Baudin’s Cockatoo and the Forest Red-tailed Black Cockatoo (Johnstone 1997; Mawson and Johnstone 1997). The long-term effects of this habitat loss may not yet have been fully realised because of the long life-span (Brouweret al. 2000) of the cockatoos. In the remaining habitat, selective removal of Marri for timber, mining, woodchipping and agriculture has resulted in further declines (Garnett and

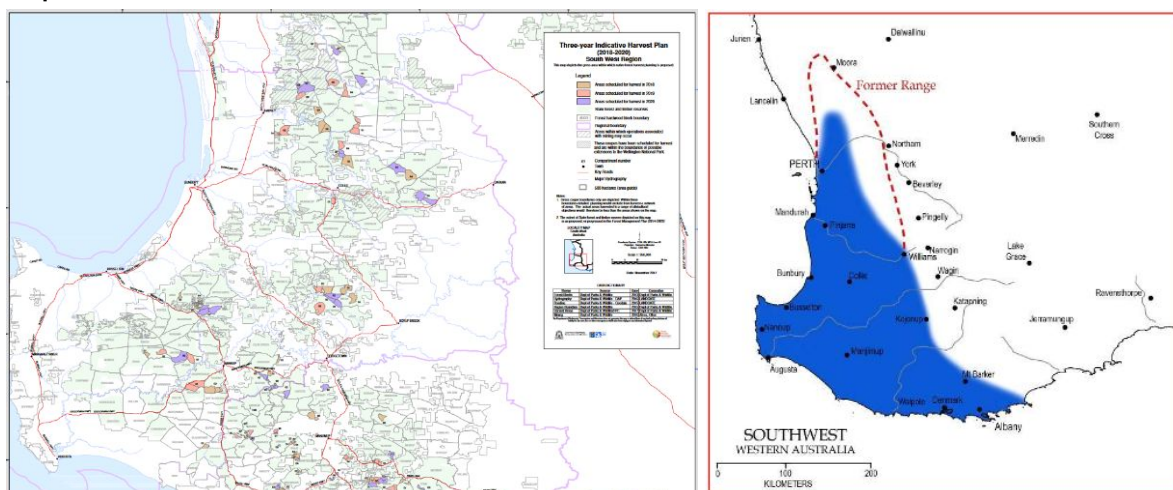
Crowley 2000, personal communication P. Mawson). The impacts of previous forest management practices for timber and woodchipping on Forest Black Cockatoo populations **have not yet been quantified**. However, forestry practices such as clear felling and 80-year cut rotations may restrict the availability of nest hollows (Saunders and Ingram 1995)... Hollows suitable for use by these two Forest Black Cockatoo species are scarce (personal communication R. Johnstone). **Analyses have shown that trees with hollows large enough for use by Forest Black Cockatoos may be between 200 and 500 years of age** (see Johnstone et al. 2002).”

www.environment.gov.au/system/files/resources/48e4fc8c-9cb7-4c85-bc9f-6b847cf4c017/files/wa-forest-black-cockatoo-recovery-plan.pdf

WA Museum (2010): The Forest Red-tailed Cockatoo was formerly common, but is now rare to uncommon and patchily distributed over a range which has become markedly reduced. Usually seen in pairs or small flocks, seldom large flocks (up to 200). It has declined due to **destruction of forests and woodlands**, also competition for nest hollows with native and exotic species and the impact of fire. There are three subspecies of Red-tailed Black Cockatoo in Western Australia. Only the south-western subspecies, *naso*, is listed as Vulnerable.

Map 1: Sample of planned logging areas that are likely to impact this species (WA).

Map 2: Present distribution—[WA Museum information sheet](#).



Full South West WA logging plan maps:

www.dpaw.wa.gov.au/management/forests/forest-produce/175-planning-for-timber-harvesting

www.dpaw.wa.gov.au/images/documents/conservation-management/forests/forest-produce/south_west_region_map_2018-2020.pdf.

Giant Barred Frog (NSW)

Mixophyes iteratus

Conservation status: **ENDANGERED** (EPBC Act)
Uplisted since RFA commenced? **NO**
EPBC Act recovery plan? **NO**; there is a 'Conservation advice' only

The species occurs along shallow rocky streams in rainforest and wet sclerophyll forest between 100 and 1,000m elevation (Covacevich & McDonald 1993) or deep, slow moving streams with steep banks in lowland areas.



Threats: "Many sites where the Giant Barred Frog occurs are the lower reaches of streams that have had major disturbances such as clearing, **timber harvesting [logging]** and urban development in their headwaters. In the Dorrigo area (north-east New South Wales), Lemckert (1999)) found that the Giant Barred Frog was **less abundant in recently logged areas** and at sites where there was little remaining undisturbed forest."

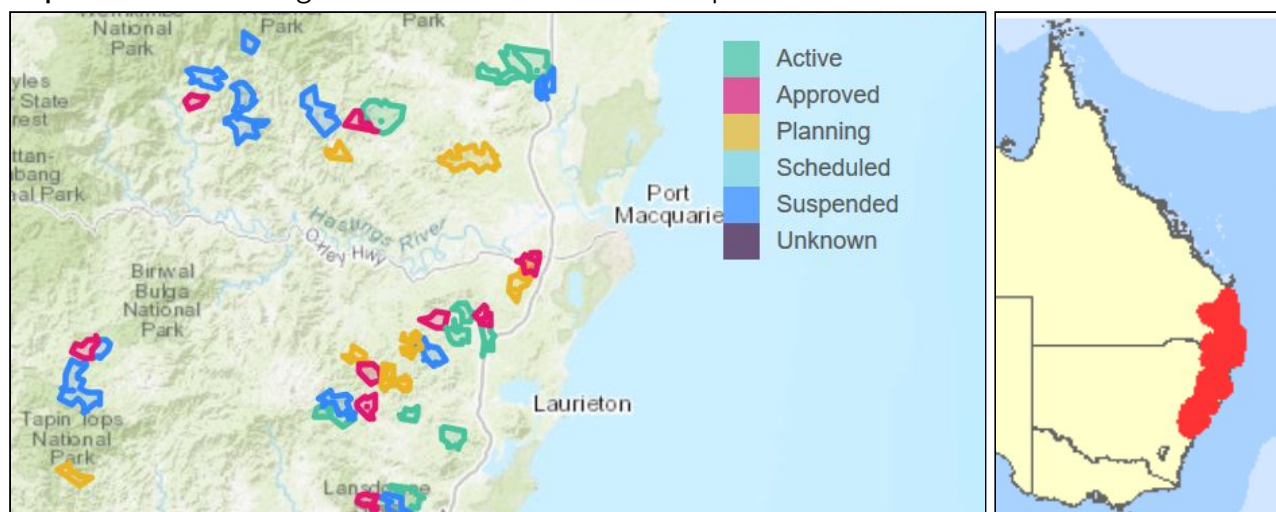
"Inadequate protection of riparian habitat **during forestry activities; reduction in water quality** or alterations to flow patterns. Embryos and tadpoles can be vulnerable to siltation."

www.environment.gov.au/biodiversity/threatened/species/pubs/1944-conservation-advice-13072017.pdf

The planned reduction in headwater stream buffers from 10m to 5m under the new NSW IFOAs would impact this species. There is no applicable recovery plan for the Giant Barred Frog, only a 2017 Conservation Advice which identifies that it moves up to 20m from streams and is impacted by logging. The new NSW IFOA proposes removing survey requirements for Giant Barred Frog and the requirement for exclusion zones, thereby opening up all exclusion zones from the past 20 years to logging. The intent is also to reduce exclusion zones along headwater streams in catchments less than 20ha—which may have significant impacts on any populations in such areas and will have significant impacts water quality for any downstream populations. There has not been any monitoring to assess the effectiveness of the current prescription and there have not been any trials to assess how Giant Barred Frog will be affected by the new prescription. (Pugh, D., 2018)

Map 1: Sample of planned logging areas 2019-2020 that are likely to impact this species (NSW).

Map 2: Giant Barred Frog distribution (Commonwealth Dept. of Environment, 2012).



Full NSW logging plan map: <https://planportal.fcns.wa.gov.au/>

Numbat (WA)

noombat or *Myrmecobius fasciatus*

Conservation status: **ENDANGERED** (EPBC Act)

Uplisted since RFA signed? **YES**; [in 2018 from Vulnerable to Endangered](#)

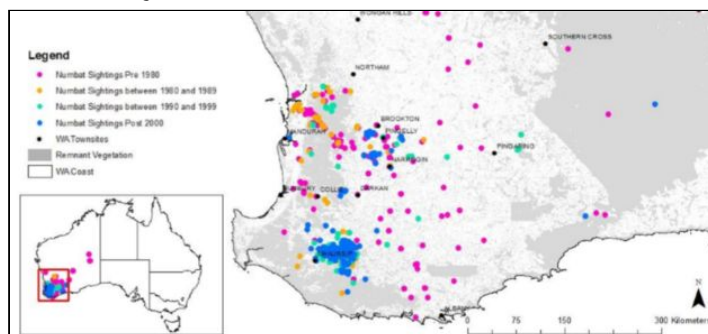
EPBC Act recovery plan? **NO**; "Recovery Plan required"—Commonwealth Department of Environment

The Numbat once lived across much of southern Australia but is now restricted to the South West of WA, due to habitat destruction and introduced predators.



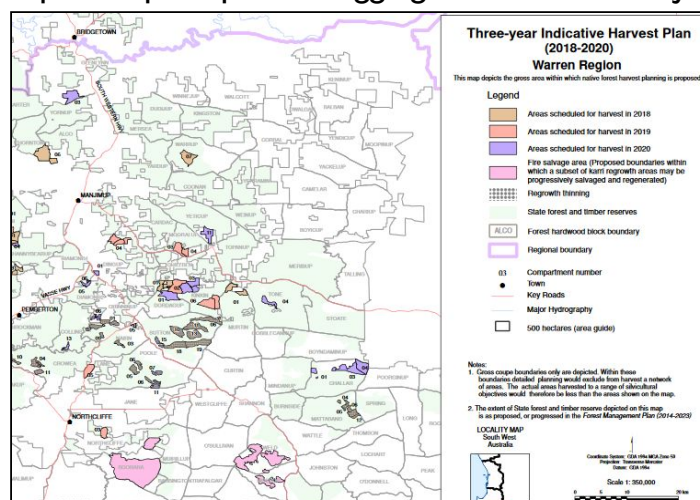
Threats: "There are estimated to be **less than 1,000** mature Numbats in the wild and less than 250 mature individuals in the largest subpopulation... Of the remaining eight self-sustaining subpopulations, two are considered to have declined in the past five years. The overall trend for the species is considered to be an **ongoing decline** (Woinarski et al. 2014; Hayward et al. 2015)... Research to better understand the effect of timber harvesting on resident Numbats and to further inform the development of the silviculture guidelines specifically for Numbats **is proposed under this recovery plan**... though more research is needed to understand the impacts of timber harvesting on Numbat habitat, **the result may indicate a need to modify commercial timber harvesting practices.**" (Recovery Plan, 2017)

Present day Numbat distribution:



www.environment.gov.au/system/files/resources/5b1825c3-becb-4b3c-8755-700767e8181d/files/numbat-recovery-plan.pdf

Map 1: Sample of planned logging areas that are likely to impact this species.



Full South West WA logging plan maps:

www.dpaw.wa.gov.au/images/documents/conservation-management/forests/forest-produce/warren_region_map_2018-2020.pdf; www.dpaw.wa.gov.au/management/forests/forest-produce/175-planning-for-timber-harvesting

Spotted-tailed Quoll (NSW/Vic/Tas)

Dasyurus maculatus maculatus

Conservation status: Mainland populations: **ENDANGERED** (EPBC Act); Tasmania: **VULNERABLE** (EPBC Act); Victoria: **THREATENED** (Flora and Fauna Guarantee Act 1988)
Uplisted since RFAs commenced? **YES**; in 2003/4 [separately listed]
EPBC Act recovery plan? **YES**



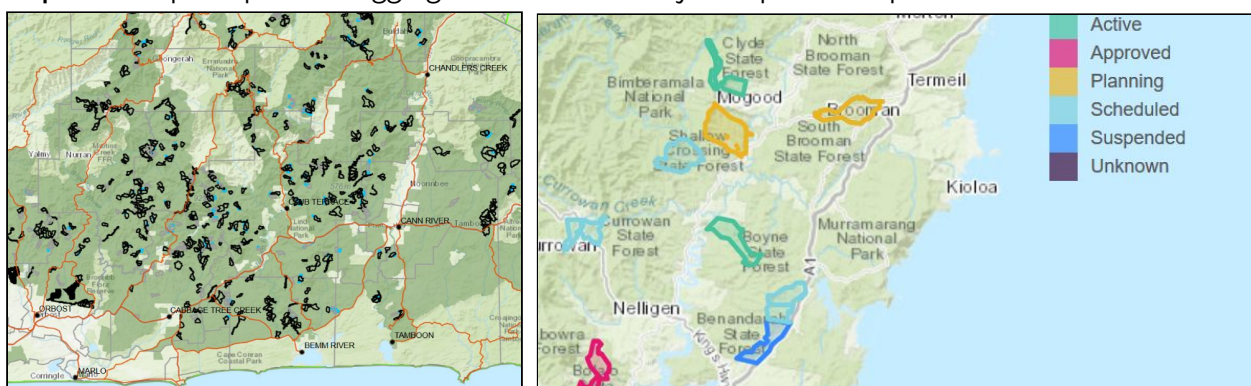
Threats: “Spotted-tailed Quoll populations are limited to **large, relatively intact patches of forest** and are **significantly prone to threatening processes that reduce, degrade and fragment such habitat**. Many of the prey of the Spotted-tailed Quoll are reliant on hollows for shelter and breeding and hence their abundance will be influenced by **forestry practices** that reduce these resources... Timber harvesting [logging] occurs through a considerable proportion of the range of the Spotted-tailed Quoll and **has been implicated in localised population declines and extinctions** (Mansergh 1984)... It is suggested that forestry practices (including controlled burns) that remove or reduce prey or critical habitat elements such as trees with hollows, hollow logs, a complex vegetation structure, >50% canopy cover and rock or burrow den sites, may render the habitat unsuitable, at least temporarily... **Given the very long time periods required to form hollows in trees and logs, intensive forestry practices could have a major impact on the availability of den sites, especially where logging is followed by burning** (Andrew 2005). These practices may be particularly detrimental to a population if they coincide with the breeding season (Watt 1993).”

www.environment.gov.au/system/files/resources/234310b-d2b4-4a1f-b66e-ddfae63c4aa6/files/national-recovery-plan-spotted-tailed-quoll.pdf

“It is apparent that the proposed increases in logging intensity [under new NSW IFOAs]—reduced protection for hollow-bearing trees and removal of protection for recruitment trees—are likely to have a significant effect on Spotted-tailed Quolls and their prey. The failure to undertake a rigorous monitoring program to assess the effectiveness of current logging prescriptions, and proposed changes to them, on Spotted-tailed Quolls is in contravention of the recovery plan objectives and actions 1.3. 4.2 and 4.3 (Pugh, D., 2018).”

In early 2018, a Spotted-tailed Quoll was discovered in the Baw Baw region, just the seventeenth sighting of the species in that part of Victoria. By law, a 500ha Special Protection Zone is required to be put in place when a Spotted-tail Quoll is sighted. On the Cottonwood Range in East Gippsland there have been only a handful of sightings of Spotted-tailed Quolls in the last decade. But, areas of forest where Spotted-tail Quolls are detected are logged, and Special Protection Zones, if allocated, are located away from detection sites (Pers. comm, 2019).

Map 1-2: Sample of planned logging areas that are likely to impact this species - Vic & NSW.



Full logging plan maps: Vic: <http://vicforeststrp.maps.arcgis.com/apps/PublicInformation/index.html>
NSW: <https://planportal.fcns.wa.gov.au/>

Greater Glider (NSW/Vic)

Petauroides Volans volans

Conservation status: **VULNERABLE** (EPBC Act)

Uplisted since RFA commencement? **YES**; in 2016 (from unlisted to 'Vulnerable')

EPBC recovery plan? **NO**; there is a 'Conservation advice' only



Greater Gliders, Australia's largest gliding possum, were once abundant along the east coast, but populations have crashed 80% in the last 20 years due to logging, land clearing, and the rising threat of bushfires linked to climate change.

Threats: "Habitat loss (through clearing, **clearfell logging** and the destruction of senescent trees due to prescribed burning) and fragmentation. **Consequence rating: Catastrophic.** Prime habitat coincides largely with areas suitable for logging; the species is **highly dependent on forest connectivity and large mature trees**... There is a progressive decline in numbers of hollow-bearing trees **in production forests** as logging rotations become shorter and as dead stags collapse (Ross 1999; Ball et al., 1999; Lindenmayer et al., 2011)."

www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-20160525.pdf

NSW: The Greater Glider is recognised nationally as Vulnerable, though not in NSW. There is no recovery plan, just a 2016 Conservation Advice that identifies logging as the most significant threat and the need to **'Constrain impacts of hardwood production through appropriate levels of patch and hollow-bearing tree retention, appropriate rotation cycles, and retention of wildlife corridors between patches'**. There has been no attempt to comply with this and, as also required by the Conservation Advice, there has been no monitoring to determine the numbers of hollow-bearing trees that need to be retained, or the effects of logging and burning on retained trees and Glider populations. The NSW Government is intending to remove logging restrictions on Glider habitat (Pugh, D. 2018).

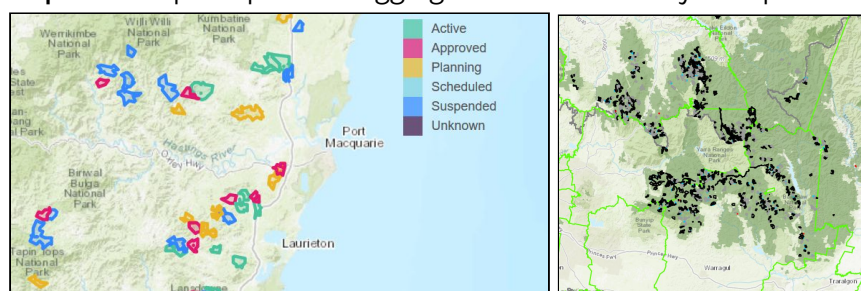
Victoria: "Timber harvesting [logging] in Greater Glider habitat has been **proven to cause declines and or local extinctions of Greater Glider populations**. [It] reduces the number of hollow bearing trees available for denning by tree removal or as a result of regeneration burns after logging... Although the animals may not die from the initial impact they will die shortly afterwards... Considering the known impacts of timber harvesting on Greater Gliders, **it is likely that other local extinctions of the species** have already occurred and will continue to occur in the future. (Victorian Scientific Advisory Committee (SAC), 2017)"

Despite the clear and unequivocal advice from the SAC, the Minister has still not released an Action Statement for the species since adding it to the Victorian threatened species list, as is required by law. A 2017 [government report on Greater Gliders](#) in the Strathbogrie Forest found that:

- The Strathbogrie Forest supports a large and regionally important population of Greater Gliders;
- The Greater Glider population in the Strathbogrie Forest has not suffered the declines that have occurred in the Central Highlands and East Gippsland;
- Government data shows that many parts of the Strathbogrie Forest support Glider numbers that exceed the 'high-density threshold' that would lead to forest protection in other parts of the state.

Nevertheless, logging continues in the Strathbogrie forest. Elsewhere in the state, VicForests is [conducting a logging experiment, knowing that the operations will kill Greater Gliders](#).

Map 1-2: Sample of planned logging areas that are likely to impact this species - NSW & Vic.



Full logging plan maps: NSW: <https://planportal.fcns.wa.gov.au/>

VIC: <http://vicforeststrp.maps.arcgis.com/apps/PublicInformation/index.html>

Large Forest Owls: (NSW/Tas/Vic)

Powerful Owl (*Ninox strenua*), Sooty Owl (*Tyto tenebricosa*), Masked Owl (*Tyto novaehollandiae*)

Conservation status: Masked Owl (Tasmanian) **VULNERABLE** (EPBC Act); **ENDANGERED** (Tasmanian Threatened Species Protection Act 1995)

Uplisted since RFA commencement? **YES**; Tasmanian Masked Owl, in 2009

EPBC Act recovery plan? **NO**; there is a 'Conservation advice'; NSW has a '[Large Forest Owls' Recovery Plan](#)



Threats: "These three species present special problems for researchers and forest managers. They are difficult to study because they are nocturnal, wide ranging and naturally uncommon throughout their distributions. **They are considered sensitive to logging and other forms of habitat disturbance since they are among the top order carnivores in the forest ecosystems of eastern Australia and many of their main prey species and nesting requirements depend on elements of old growth forest.** Each of the Large Forest Owls are listed as threatened in NSW. Early assessments of their conservation status by Lunney et. al. (2000) suggested that the populations of each species and their current distributions have declined."

www.environment.nsw.gov.au/research-and-publications/publications-search/recovery-plan-for-the-large-forest-owls
www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=67051

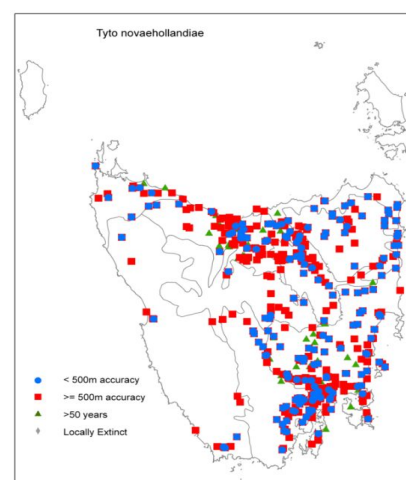
NSW: The remapping and rezoning of old growth forest and the ability to log giant trees through the new North East NSW IFOA will impact LFOs; The reduction of headwater stream buffers and the subsequent logging of large trees will impact LFOs as these riparian areas are often breeding areas (Pugh, D., 2018).

Victoria: The Sooty Owl (*Tyto tenebricosa*) is a medium large owl listed as Vulnerable in Victoria. The Central Highlands are a stronghold for the remaining population, which in 1989 was estimated at fewer than 500 breeding pairs, and in 2003 possibly as low as 400 breeding pairs. Sooty Owls are long-lived, mate for life, and are very territorial. 20-30 pairs of Sooty Owls require at least 25,000ha of suitable forest containing trees at least 150-200 years of age. Victoria's Scientific Advisory Committee has declared that the species is, "very rare in terms of abundance or distribution." Logging is listed as a threatening process for the Sooty Owl. To improve the conservation outcome for this species, scientists advise that threatening processes must be reduced and/or removed from the animal's habitat to ensure Forest Owls' persistence in the wild.



Tasmanian Masked Owl

"The main threats to the Tasmanian Masked Owl are **clearing of nesting/roosting and foraging habitat (particularly tree hollows)**... and competition with other species for the limited number of suitable nesting hollows... To avoid loss of nesting/roosting habitat—**do not clear old growth forest containing potential nesting trees,** and other non-old growth forests which contain old growth elements including hollow-bearing trees. To avoid loss of nesting/roosting trees—**do not remove single or isolated older trees which contain hollows suitable for nesting.**"



Map of Masked Owl distribution:

[www.threatenedspecieslink.tas.gov.au/Pages/Masked-Owl-\(Tasmanian\).aspx](http://www.threatenedspecieslink.tas.gov.au/Pages/Masked-Owl-(Tasmanian).aspx)

1.2 Further threatened forest-dwelling, logging-impacted species

Baw Baw Frog: Uplisted to Critically Endangered, June 2019

The Baw Baw Frog is Critically Endangered under the EPBC Act and Victorian legislation. It is Victoria's only endemic frog and is found only on the plateau and surrounding escarpments of Mt Baw Baw. It is also red listed as Critically Endangered under the IUCN. As at 2004, just 2% of its 1983 population count remained. Logging exclusion zones around the frog's habitat have no formal status or protection.

"Since the discovery of the Baw Baw Frog (*Philoria frosti*) in montane habitats in Victoria's State Forest in 1996, **forestry activities (roading and timber harvesting) have been identified as a serious threat to the long-term survival of the species.**"

www.environment.gov.au/system/files/resources/9980f234-eff5-4b90-8d57-23889af8caef/files/philoria-frosti-recovery-plan.pdf

Green and Golden Bell Frog: Vulnerable (EPBC Act); Endangered (Threatened Species Conservation Act 1995—NSW); Victoria: Unlisted—data deficient.



The Vulnerable Green and Golden Bell Frog has no recovery plan. The 2014 Conservation Advice requires surveys and monitoring of management actions. The Significant Impact Guidelines identify a significant impact as constituting "the removal or degradation of terrestrial habitat within 200 metres" of known or suitable habitat and the breakage of habitat linkages, while specifying specific survey guidelines. The NSW 'Threatened Species Licence' (TSL) requires buffers of 50m around records or occupied waterbodies, with significantly less survey requirements than recommended. The new NE NSW IFOA proposes removing survey requirements for Green and Golden Bell Frogs and the requirement for exclusion zones, thereby opening up all exclusion zones established in the past 20 years for logging. This contravenes the Approved Conservation Advice (Pugh, D. 2018).

www.environment.gov.au/biodiversity/threatened/species/pubs/1870-conservation-advice.pdf

Large Brown Tree Frog: Vulnerable (EPBC Act)

The Large Brown Tree Frog (*Litoria littlejohni*) was only recently 'rediscovered' in East Gippsland. It was one of four threatened species named in a [2013 Supreme Court case](#) lodged by environmentalists against the state government. The Environment Defenders Office claimed the government had failed to draw up [plans](#) to adequately protect the threatened species.

www.smh.com.au/technology/brown-tree-frog-longthought-extinct-rediscovered-in-east-gippsland-20150508-ggx1u7.html

"Timber harvesting may adversely impact on Large Brown Tree Frog populations by causing habitat degradation, clearance and fragmentation. Timber harvesting may also indirectly affect this species by reducing availability and viability of breeding habitat, affecting availability of food, increasing predation rates by removing or altering vegetation, altering habitat (e.g., light penetration, soil moisture, thermal regime etc.) and isolating populations (Gillespie 2009)."

(Action Statement No. 255 (2014): Large Brown Tree Frog *Litoria littlejohni*. Flora and Fauna Guarantee Act 1988.)

www.environment.gov.au/biodiversity/threatened/species/pubs/64733-conservation-advice.pdf

Fleay's Barred Frog: Endangered (EPBC Act)

"Many sites where *M. iteratus* occurs are the lower reaches of streams that have had major disturbances such as clearing, **timber harvesting** and urban development in their headwaters. In the Dorrigo area (north-east New South Wales), Lemckert (1999) found that *M. iteratus* was **less abundant in recently logged areas** and at sites where there was little undisturbed forest."

www.environment.gov.au/system/files/resources/bbac0cba-9c93-44c2-bb68-a72207a2141a/files/stream-frogs.pdf

The new NSW North East IFOA proposes removing survey requirements for Fleay's Barred Frog and the requirement for exclusion zones, thereby opening up all exclusion zones established in the past 20 years for logging. The intent is also to reduce exclusion zones along headwater streams in catchments less than 20ha down from mostly 10m to 5m (which represents 75% of streams) which may have significant direct

impacts on any populations in such areas and will have significant impacts water quality for any downstream populations. There has not been any monitoring to assess the effectiveness of the current prescription and there have not been any trials to assess how Fleay's Barred Frog will be affected by the removal of the prescription. This is in contravention of the Conservation Advice (Pugh, D. 2018).

www.environment.gov.au/system/files/resources/bbac0cba-9c93-44c2-bb68-a72207a2141a/files/stream-frogs.pdf

Hastings River Mouse: Endangered (EPBC Act)

“Timber harvesting impacts adversely on the Hastings River Mouse by reducing shelter provided by hollow logs and old growth stems with butt cavities. Harvesting activities also open up the understorey and create roads and tracks potentially leading to increased predation pressure.”

www.environment.gov.au/system/files/resources/cd6fc094-bcaa-4da6-98d8-140784e4aeca/files/p-oralis.pdf

The recovery plan for the Endangered Hastings River Mouse was adopted by NSW in 2005, 13 years after it was started and 8 years after the draft plan was prepared. It includes specific survey and habitat requirements which were initially incorporated into the Threatened Species Licence in a reduced form. In contravention of the recovery plan the Threatened Species Licence (TSL) was amended in 2007 and in 2010 to allow logging operations within 31 compartments in 6 State Forests to be undertaken within areas that would otherwise be required to be protected. The prescription for the Hastings River Mouse was changed in November 2011 to significantly reduce exclusion areas and survey requirements to reduce the likelihood of detecting its presence. Habitat retention requirements are proposed to be further reduced in the new Coastal IFOA. The current and proposed logging prescriptions are clearly not consistent with the recovery plan (Pugh, D. 2018).

Broad-headed Snake: Vulnerable (EPBC Act); Endangered (Threatened Species Conservation Act 1995, NSW)

For the Vulnerable Broad-headed Snake the 2014 Conservation Advice identifies that it utilises rock outcrops and hollow-bearing trees within 200m, with the need to survey for the species and retain hollow-bearing trees. The Commonwealth survey guidelines are not applied in forestry. The prescription for this species was removed from the TSL in 2013. There is no requirement to survey for this species or to protect hollow-bearing trees within 200m of rock outcrops. This species will be impacted by the NSW Coastal IFOAs proposals to increase logging intensity, the removal of the need to restore 5 hollow-bearing trees per hectare in escarpment forests and the need to retain the recruitment trees required to replace hollow-bearing trees as they die out (Pugh, D. 2018).

www.environment.gov.au/biodiversity/threatened/species/pubs/1182-conservation-advice.pdf

Coxen's Fig Parrot: Endangered (EPBC Act)

“Logging and associated disturbance of the subtropical rainforest/eucalypt ecotones thought to be part of the breeding habitat may also be a threat for the subspecies. Forshaw (1981) emphasises the special need to protect the rainforest edge where burning, clearing or logging operations not specifically targeted at the rainforest can be particularly damaging.”

www.environment.gov.au/system/files/resources/9170039a-db76-4835-b541-5c08bb4a9775/files/cyclopsitta-diophthalma-coxeni.pdf

The 2001–2005 recovery plan for the Endangered Coxen's Fig Parrot and the Commonwealth's 2016 Conservation Advice clearly identify the need to protect rainforest ecotones as potential breeding habitat for this species. This has never been provided. The NSW NRC (2018) proposes the remapping of rainforest with a view to opening up substantial areas for logging. In their trial remapping 62% of rainforest was remapped as not being rainforest under their new criteria. It is evident that the recovery plan and Conservation Advice for this species have never been complied with (Pugh, D. 2018).

www.environment.gov.au/system/files/resources/9170039a-db76-4835-b541-5c08bb4a9775/files/cyclopsitta-diophthalma-coxeni.pdf

Broad-toothed Rat (Mainland): Vulnerable (EPBC Act)

The Barrington Tops population of the Vulnerable Broad-toothed Rat is listed as an Endangered population. The current prescription requires all “Suitable habitat for Broad-toothed Rat” to be protected with a 20m buffer. Under the planned NE NSW IFOAs, all species-specific protection is intended to be removed. It can not be assumed that this endangered population is adequately protected by the proposed exclusions. The Conservation Advice requirement to “undertake a targeted survey of all suitable habitat within the

subspecies' range" and to undertake a monitoring program to assess management effectiveness has not been complied with (Pugh, D. 2018).

Large-eared Pied Bat: Vulnerable (EPBC Act)

The 2011 'National recovery plan for the Large-eared Pied Bat *Chalinolobus dwyeri*' identifies that it roosts in caves and overhangs and forage in nearby high-fertility forest or woodland near watercourses. It recommends the protection of known roosts and associated foraging habitats, with monitoring of the effectiveness of prescriptions. The current NSW TSL requires 50m buffers around roosts and the new Coastal IFOA generally requires 100m buffers around potential roosts, though neither require protection of associated foraging habitat. The effectiveness of the current or proposed prescriptions have never been monitored. The proposed Coastal IFOA significantly increases logging intensity and reduces headwater stream buffers which will significantly increase impacts on the foraging habitat of this species. It clearly contravenes the recovery plan (Pugh, D. 2018).

www.environment.gov.au/biodiversity/threatened/species/pubs/183-listing-advice.pdf

Rufous Scrub Bird: Endangered (EPBC Act)



"[Threats are] risk of local extinctions because many populations and sub-populations are small and isolated; disturbance to habitat from inappropriate forestry activities." ([NSW Office of Environment and Heritage](#))

For the Endangered Rufous Scrub-bird, the 2014 EPBC Conservation Advice identifies that there is no need for a Recovery Plan because "the remaining populations mostly occur in protected habitat". Contrary to the Advice Rufous Scrub Bird does occur on State Forests in NE NSW. The current TSL requires that the all "microhabitat" within 300m of a record be protected, along with 20m buffers. The evidence is that the required prescriptions are rarely applied in practice and that the

Forestry Corporation does not have the expertise to identify the species or its microhabitat. The new Coastal IFOA retains the prescription though allows surveys in seasons when it is unlikely to be detected (Pugh, D. 2018).

Black-breasted Button Quail: Vulnerable (EPBC Act)

The Vulnerable Black-breasted Button Quail is covered by a 2009 recovery plan that requires a new predictive model, surveys in potential habitat and the implementation of management prescriptions for forestry. Instead of developing an improved predictive model to guide surveys for this species, in 2013 the TSL was changed to remove the need for pre-logging surveys. The proposed Coastal IFOA removes all protection. The NRC (2018) proposes the remapping of rainforest with a view to opening up substantial areas for logging. In their trial remapping, 62% of rainforest was remapped as not being rainforest under their new criteria. It is evident that the recovery plan for this species have never been complied with in NSW (Pugh, D. 2018).

www.environment.gov.au/biodiversity/threatened/species/pubs/923-conservation-advice-31102015.pdf

Giant Burrowing Frog: Vulnerable (EPBC Act)

The Vulnerable Giant Burrowing Frog has no recovery plan, though has a 2014 Conservation Advice which requires site specific management plans, protection of breeding sites and the retention of vegetation "especially within 300m of known breeding sites". In 2013 the NSW TSL was altered to remove survey requirements and replaced with tadpole monitoring where there are records. The proposed NE NSW Coastal IFOA removes all protection for this species, while proposing increased logging intensity and that buffers on headwater streams be reduced from 10m to 5m—despite the Conservation Advice being that "narrow buffers along streams does not sufficiently protect the species habitat (Pugh, D. 2018)."

www.environment.gov.au/biodiversity/threatened/species/pubs/1973-conservation-advice.pdf

Stuttering Frog: Vulnerable (EPBC Act)

There is a 2011 recovery plan for the Vulnerable Stuttering Frog that identifies it uses small streams and forest well away from streams, with forestry identified as a threat and the need for monitoring and application of forestry prescriptions. The current NSW TSL requires surveys and the implementation of 30m buffers on "mapped" streams (not "unmapped") within 200m of records. It has been found that the prescription has not been applied in practice. The new NE NSW IFOA proposes removing survey

requirements for Stuttering Frog and the requirement for exclusion zones, thereby opening up for logging all exclusion zones established in the past 20 years. The intent is also to reduce exclusion zones along headwater streams in catchments less than 20ha down from mostly 10m to 5m which may have significant direct impacts on any populations in such areas and on water quality for any downstream populations. There has not been any monitoring to assess the effectiveness of the current prescription and there have not been any trials to assess how Stuttering Frog will be affected by the removal of the prescription. This is in contravention of the recovery plan (Pugh, D. 2018).

www.environment.gov.au/system/files/resources/1d0025d1-819d-48cd-9164-f62187505f1a/files/stuttering-frog.pdf

Southern Brown Bandicoot (eastern): Endangered (EPBC Act)

Uplisted to Endangered in 2001.

“The impacts of logging [on the Southern Brown Bandicoot] vary depending on the forest management regime and the age of regrowth (Brown & Main 2010). **Impacts are large in south-east NSW.**”

www.environment.gov.au/biodiversity/threatened/species/pubs/68050-conservation-advice-05052016.pdf

Woylie: Endangered (EPBC Act)

“There has been considerable habitat change driven by human activity since European settlement. This includes direct land clearing for housing, timber, agricultural production, grazing, as well as, altered fire regimes and landscape scale changes...These activities have reduced the effective area of habitat that meets all the food and shelter requirements of woylies and increases their vulnerability to exotic predators.”

www.environment.gov.au/system/files/resources/8c82d8f5-074f-40d8-8f2f-dc70bef7ab13/files/bettongia-penicillata-ogilbyi.pdf

Long-footed Potoroo: Endangered (EPBC Act)

“The main causes of habitat disturbance within the distribution of the Long-footed Potoroo are **timber harvesting** and fire... To facilitate informed forestry and Long-footed Potoroo management planning, it is clearly important that the effects of timber harvesting on the Long-footed Potoroo are clarified.”

www.environment.gov.au/system/files/resources/197e89b8-4d47-41e9-9faa-69c412f0bd06/files/long-footed-potoroo.pdf

Tasmanian Azure Kingfisher: Endangered (EPBC Act)

Uplisted to Endangered in 2010.

www.environment.gov.au/biodiversity/threatened/species/pubs/25977-conservation-advice.pdf

Painted Honeyeater: Vulnerable (EPBC Act)

Uplisted to Vulnerable in 2015.

www.environment.gov.au/biodiversity/threatened/species/pubs/470-conservation-advice.pdf

Balstons Pygmy Perch: Vulnerable (EPBC Act)

www.environment.gov.au/biodiversity/threatened/species/pubs/66698-conservation-advice.pdf

Booroolong Frog: Endangered (EPBC Act)

Uplisted to Endangered in 2007.

“Habitat modification and disturbance has played a major role in the historic decline of the Booroolong Frog. Vegetation clearing, stock grazing, and **timber harvesting** [logging] have occurred adjacent to many streams, or in the headwaters of catchments throughout the species former range (Gillespie 1999, 2000).”

www.environment.gov.au/system/files/resources/bb38ec60-bdea-43db-8fbd-4b28a0af6fca/files/litoria-booroolongensis.pdf

Spotted Tree Frog: Endangered (EPBC Act)

www.environment.gov.au/resource/spotted-tree-frog-1998-2002-recovery-plan

Peppered Tree Frog: Vulnerable (EPBC Act)

Listed as Critically Endangered in NSW under the Threatened Species Conservation Act 1995.

www.environment.gov.au/biodiversity/threatened/species/pubs/1827-conservation-advice-13072017.pdf

Central-north Burrowing Crayfish: Endangered (EPBC Act)

Uplisted to Endangered in 2005.

"The main identified threats to the Central North Burrowing Crayfish are **habitat modification from agriculture, forestry** and urban development activities; trampling and soil compaction by stock; establishment of roads and associated drainage; degradation of riverbank integrity and enhanced erosion; and competition for resources and introduction of disease and parasites by the introduced Freshwater Yabby."

www.environment.gov.au/biodiversity/threatened/species/pubs/78959-conservation-advice.pdf

Smoky Mouse: Endangered (EPBC Act)

"**Timber harvesting** [logging], roading and habitat fragmentation are all potential threats in areas of State Forest that are available for timber harvesting."

www.environment.gov.au/system/files/resources/31499c6a-d455-4488-93eb-ef9e012550ff/files/pseudomys-fumeus.pdf

Chuditch: Vulnerable (EPBC Act)

"Chuditch have disappeared from approximately 95% of their former range in the last 200 years. Now restricted to South West WA, the primary causes of this reduction were habitat removal, the spread of introduced predators and active persecution by humans... Actions that remove native vegetation (e.g. increased fire frequency, clearing for development, mineral exploration and extraction, **forestry**) can result in a significant impact on the chuditch, particularly if these actions remove habitat critical for survival, or occur within 15 km of habitat critical to survival."

www.environment.gov.au/system/files/resources/d6c37be6-42cd-48c4-9cb6-9919457c8898/files/dasyurus-geoffroii-2012.pdf

Baudin's Cockatoo (WA): Endangered (EPBC Act)

Uplisted to Endangered in 2018.

"Nest hollow shortage is a principal threat to Baudin's Cockatoo. **The primary threatening processes resulting in nest hollow shortages are land clearing practices for agriculture, forestry and mining**, fire events and competition with invasive and native species."

www.environment.gov.au/biodiversity/threatened/species/pubs/769-conservation-advice-15022018.pdf

Tasmanian Wedge-tailed Eagle: Endangered (EPBC Act)

"The Tasmanian Wedge-tailed Eagle is endemic to the State and is known to occur in all habitats throughout Tasmania (vagrant on King Island). However, the species **requires old growth forest** on sheltered sites for nesting and this, combined with territorial behaviour act to limit its breeding range and potential. The size of the population is estimated at between 1000 and 1500 individuals. A population decline is inferred **due to loss of nesting habitat, nest disturbance from land clearance and other inappropriate land management practices**."

www.environment.gov.au/system/files/resources/65561423-e15b-45f6-84e9-ad7f5f237d79/files/tasmanian-wedge-tailed.pdf

Swan Galaxias: Endangered (EPBC Act)

"Most of the current Swan Galaxias populations occur **within State Forest area**. The potential hydrological effects from vegetation clearing in areas adjacent to waterways with Swan Galaxias (such as more frequent drying, higher or more frequent flood flows) remain a concern due to the lack of data to determine likely water yield responses (TSS 2006)."

www.environment.gov.au/biodiversity/threatened/species/pubs/26167-conservation-advice-16122016.pdf

Black-striped Dwarf Galaxias: Endangered (EPBC Act)

Eastern Dwarf Galaxias: Vulnerable (EPBC Act)

Long-nosed Potoroo (SE Mainland): Vulnerable (EPBC Act)

www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66645

Grey-headed Flying-fox: Vulnerable (EPBC Act)

www.environment.gov.au/biodiversity/threatened/conservation-advice/pteropus-poliocephalus

Quokka (Mainland WA): Vulnerable (EPBC Act)

In order to survive in the forests of South West WA, the Quokka requires dense shelter to protect it from predation by foxes and cats. Current forest management activities, including logging, roading and repeated burning, are removing the cover they require and allowing easy access by predatory foxes and cats.

www.environment.gov.au/system/files/resources/4581df81-0041-4fc9-ba1b-aca7cb22246d/files/quokka-recovery-plan.pdf

Part 2: Nature laws, RFAs and protecting HCV forests

The need for new and improved Federal environmental laws and institutions has been [widely identified and documented](#) in Australia over recent years.^{5 6} One consistent finding of reviews has been the inadequacy of the nation's primary environment law, the EPBC Act.

All the documented inadequacies of the EPBC Act are compounded in relation to forests by the so-called 'RFA exemption', a legal loophole which allows state-run logging operations in forests covered by a Regional Forest Agreement to proceed without any requirement for regular Federal environmental assessment or approval, despite the obvious decline of many Federally-listed threatened forest wildlife species.

Under the EPBC Act the Federal Government has ultimate responsibility to regulate any activity that affects 'matters of national environmental significance' (MNES). This includes national responsibility to protect threatened species and ecological communities, migratory species, internationally important wetlands, World Heritage Areas and National Heritage Areas, including the Tasmanian and NSW World Heritage Areas.

However, through the RFAs, it is the states which have been given devolved powers and responsibilities to manage forests and regulate logging in public native forests, including to protect environmental values and MNES.

Although under the EPBC Act Ministers must not act inconsistently with a national threatened species recovery plan when approving developments, under the RFAs with their exemption from the EPBC Act, there is nothing that legally compels state governments to actually implement the actions contained in the recovery plans. The result is that state governments are not required to secure forest species' survival and the Federal Government has abrogated its responsibilities to protect them.

The 'RFA exemption' in the EPBC Act means the Federal Government appears to be unable, as well as unwilling, to intervene even when logging threatens the survival of endangered species like the Leadbeater's Possum, Swift Parrot and Giant Freshwater Lobster.

For example, the recently re-signed Tasmanian RFA, the first to be extended for a second rolling 20-year term, amends the terms of the original agreement to explicitly provide for logging of old growth and rainforest tree species (some with a minimum age of 300 years) in established conservation reserves. This together with a [2014 legislative change](#), exposes longstanding reserves declared explicitly to protect values from logging, to the threats associated with logging.⁷

As leading Australian scientists have stated,

"Regional Forest Agreements (RFAs) and the logging that is facilitated by them are threatening the survival of endangered species such as the Swift Parrot and Leadbeater's Possum. RFAs have exempted the logging industry from environmental laws that other industries are required to adhere to. They are based on data that is long out of date and forest management is therefore poorly informed and often highly inappropriate. There is little attempt by the industry to increase key areas of knowledge to improve threatened species conservation. This further threatens the persistence of a wide range of threatened species." Prof. D. Lindenmayer, et al. (2015). **The need for a comprehensive reassessment of the Regional Forest Agreements in Australia.** Pacific Conservation Biology 21:266-270.

The RFAs are a major failure of public policy—they have not delivered on their stated objectives to provide security to the timber industry, deliver 'ecologically sustainable forest management' (ESFM) or a secure conservation reserve system. Instead we have seen native forest-based wood and fibre industry employment fall (with a decrease in Australian forest sector jobs (plantation and native forest) of **33%** over the decade to 2016, for example⁸), poorly directed taxpayer subsidies (for example [Victorian Government buying into a native forest sawmill](#)), serious environmental damage, uplisting of threatened species, and [ongoing community and market conflict](#).

⁵ Blueprint for next Generation of Australian Environmental Law. Australian Panel of Experts on Environmental Law. 2017.

⁶ The Vision for Nature Australia Needs: www.wilderness.org.au/images/resources/A_Vision_For_Nature.pdf

⁷ Logging on FPPF Land: Changes to Tasmanian Forest Laws. EDO Tasmania. 2014.

⁸ State of the Forests Report 2018. Commissioner for Environmental Sustainability Victoria.

How can the Federal Government better protect threatened wildlife and other forest values and ensure any logging is properly regulated?

2.1 Recommendations on Regional Forest Agreements

In light of the extinction crisis in our forests, the Federal Government must act to ensure the following:

1. **Expire**—When they reach their current expiry date (April 2020), the five Victorian RFAs must be allowed to expire—or, together with the recently renewed RFAs in Tasmania, WA and NSW, be terminated and replaced with agreements that reflect significantly changed environmental, social, economic and climate conditions.
2. **Coverage**—All native forest logging operations must be subject, like other industries, to the assessment and approvals provisions of the EPBC Act. This is particularly important considering the industry's considerable impact on 'matters of national environmental significance' under the EPBC Act, such as nationally-listed threatened species.
3. **Reassessment**—Any future arrangements in relation to public native forests must be based on a thorough and comprehensive reassessment of the RFAs including the changed social, environmental and economic context of forest management.
4. **Value all uses**—Any future forest management arrangements that replace RFAs should value and account for the full range of forest uses including; conservation, tourism, recreation, water, carbon and any limited native forest logging that may form part of a rapid industry transition.

The Federal Government must also use its existing powers and resources to:

- Ensure the protection of all high conservation value (HCV) forests within the six internationally recognised high conservation value categories (Forest Stewardship Council, 2019).⁹ This includes: threatened species habitat and endangered ecological communities; old growth, rainforest, water catchment and Critically Endangered forests.
- Formally list logging and logging-associated roading and burning as Key Threatening Processes and develop and implement a Threat Abatement Plan to mitigate the impact on native forest ecosystems and forest-dependent species.
- Implement strong species protections by:
 - implementing existing recovery plans for priority species in areas of highest ecological imperative, i.e. in areas with imminent risk of ecosystem collapse, and ensure these plans are science-based
 - beginning reassessment of all forest-dependent species on threatened species list to ensure their listing status is accurate and critical habitat is mapped, beginning with priority categories of Critically Endangered and Endangered fauna and Critically Endangered ecosystems.
- Develop and release methodologies for accounting for and valuing carbon in native forests for conservation (avoided logging methodology).
- At a national level, bring together coherent, accurate and contemporary data and mapping of primary, remnant, old growth and HCV forests and bushland.

2.2 Broader reform of national environmental governance

While the above steps can serve as a short-term stopgap, an entirely new regulatory approach is required to fix the more systemic failure of environmental governance in Australia. The Australian Panel of Experts in Environmental Law argues that the Federal Government should, and has the sufficient constitutional power to, provide such leadership. This includes the ability to override states and territories where they are not meeting key targets.¹⁰ This does not mean taking on full responsibility of all existing state environmental laws and administration arrangements; it means having greater financial incentives and regulatory power

⁹ The FSC National Forest Stewardship Standard of Australia. Forest Stewardship Council (2019).

¹⁰ Australian Panel of Experts on Environmental Law. 2017. *Environmental Governance—Technical Paper 2* (Online). <http://bit.ly/2uDvVew>. Accessed July 2017.

to both incentivise and enforce all Australian government jurisdictions to comply with national environmental plans and targets.

To effectively regulate logging and protect our forests and wildlife, the Federal Government must reform our national environment governance to include:

- a **new Australian Environment Act** that commits the Australian Government to end destruction of old growth forests and critical habitat for endangered animals, end extinctions of our wildlife species and protect our vital waterways and catchments.
- a **National Environment Commission** to develop Environment Plans including clear national plans and standards for industries and sectors. As part of developing these plans and standards, the Commission would regularly assess wood forecast, yields and models in the context of bushfires, climate change, and meeting conservation requirements for forest-dependent threatened species.
- a **National Environmental Protection Authority** to enforce the law, without political interference, and to ensure that damaging proposals are assessed independently by experts, not decided through backroom deals with paid lobbyists or via special exemptions from environmental laws.
- **guaranteed citizen legal rights** to ensure that environment laws are enforced fairly and transparently, to have decisions reviewed on the basis of their merits and to ensure all communities have a say in decision-making.

2.3 Protected areas: Achieving a CAR reserve system for our forests

The current national protected area system is not comprehensive, adequate and representative ('CAR')—the three key formal scientific objectives agreed by all Australian governments.¹¹ New and expanded formal and informal protected areas are required to protect critical threatened species habitat and threatened ecological communities.

In addition to the EPBC Act itself, the Federal Government is a signatory to the international treaty the **Convention on Biological Diversity**¹² and custodian of the **National Reserve System**,¹³ under which Australia has targets for the protection of bioregions, ecosystems and species.

National targets for building the National Reserve System are set collaboratively by the Australian Government with the states and territories. The targets are part of the strategic national approach to make measurable progress towards the establishment of a [comprehensive, adequate and representative](#) (CAR) protected area system.

Since the RFAs were signed 20 years ago there has been no **government-led, science-based** process to update and improve the forest conservation reserve system, particularly in response to changing community values,¹⁴ serious species decline and climate change.

One of the key objectives of the RFAs was the establishment of a CAR reserve system, based on nationally agreed criteria. Despite attempts at the time, the RFAs failed to achieve this for forests when first adopted 20 years ago, and have failed to since. For example, large areas of forest were placed in 'informal' CAR reserves which have no statutory protection and which are seen by the state's logging agencies as future logging areas (see discussion above of continuing attempts by Tasmania and NSW Governments in particular to open 'informal' reserves to logging).

As leading forest ecologists have stated in relation to the Central Highlands of Victoria, for example,

*New information on the adequacy of reserves in the Central Highlands RFA has indicated that the **current protected areas network is highly inadequate** for key threatened species such as Leadbeater's Possum and the Greater Glider. The RFA has locked-in wood supply and is not able to accommodate the urgent need to better protect key species and prevent them from going locally or globally extinct.*

¹¹ WWF-Australia, 2016. *Building nature's safety net 2016: state of Australian terrestrial protected area network* (Online). <http://bit.ly/2gWqmVD>. Accessed July 2017.

¹² <https://www.cbd.int/>

¹³ <https://www.environment.gov.au/land/nrs>

¹⁴ *Community perceptions of Australia's Forest, Wood and Paper Industries: Implications for Social License*. Schirmer, J., et al, University of Canberra/Forest and Wood Products Association, 2017.

Professor David Lindenmayer AO; Dr. Matthew H. Webb; Dr Dejan Stojanovic; Professor Robert Heinsohn; David Blair; Lachlan McBurney (2018). Submission #28 to the Senate Faunal Extinction Crisis Inquiry. Fenner School of Environment and Society, ANU, Canberra.

Similar findings have been made across all the RFA regions where the existing reserve system has been shown to be inadequate. Despite this, some state governments are actively attempting to reduce the level of forest protection. In NSW the new forest logging plan, or 'IFOA', for the North East region proposes to reduce the extent of protected forest by remapping old growth forest—potentially opening up around **100,000ha** to logging, while the Tasmanian Government is attempting to open up for logging up to **356,000ha** of currently protected 'FPPF' forest.

In order to protect our threatened forest wildlife and provide for all the other environmental, social and economic values of intact forests, an improved conservation reserve system, with adequate funding for management, is essential.

2.4 Protected area proposal(s) relevant to featured species

Below is a summary of proposals for new HCV forests protected areas that would help ensure the survival of threatened forest-dwelling and forest-dependent species. The proposals have been developed over several years by forest conservation and community groups in NSW, Victoria, Tasmania and Western Australia.

Regent Honeyeater

[Great Koala National Park](#) (NSW)

[Great Southern Forest sanctuary](#) (NSW)

Numbat, Forest Red-tailed Black Cockatoo and Western Ringtail Possum

High Conservation Value forest protection campaigns ongoing (WA)

Swift Parrot

"Future Potential Production Forest" (FPPF) reserves (Tasmania). See:

www.wilderness.org.au/news-events/you-and-your-parks

[Emerald Link—East Gippsland](#) (Victoria)

[Great Southern Forests sanctuary](#)

[Great Koala National Park](#)

Leadbeater's Possum

[Great Forest National Park](#) (Victoria)

Barred Galaxias

[Great Forest National Park](#)

Giant Freshwater Crayfish

"Future Potential Production Forest" (FPPF) reserves (Tasmania). See:

www.wilderness.org.au/news-events/you-and-your-parks

Koala

[Great Koala National Park](#)

Other proposed NSW North Coast Koala reserves. See:

https://npansw.org/wp-content/uploads/2018/08/50-Park-Proposals-NPA-31_1_2018.pdf

[Great Southern Forest sanctuary](#)

Transfer of Murrah Flora Reserves to Biamanga National Park (NSW)

Giant Barred Frog

[Great Koala National Park](#)

Spotted Tailed Quoll

[Great Southern Forest sanctuary](#)

[Emerald link—East Gippsland](#)

[Great Forest National Park](#)

[Great Koala National Park](#)

Additions to Barrington Tops NP (NSW). See:

https://npansw.org/wp-content/uploads/2018/08/50-Park-Proposals-NPA-31_1_2018.pdf

Greater Glider

[Emerald Link—East Gippsland](#)

[Great Koala National Park](#)

[Great Southern Forest sanctuary](#)

[Great Forest National Park](#)

[Strathbogie Forest](#) (Victoria)

Large Forest Owls (including Tasmanian Masked Owl)

[Great Koala National Park](#)

Other proposed north coast Koala reserves (NSW):

https://npansw.org/wp-content/uploads/2018/08/50-Park-Proposals-NPA-31_1_2018.pdf

[Great Southern Forest Sanctuary](#)

[Great Forest National Park](#)

“Future Potential Production Forest” (FPPF) reserves. See:

<https://www.wilderness.org.au/news-events/you-and-your-parks>

[Emerald Link—East Gippsland](#)

[Strathbogie Forest](#)

Part 3: Case studies: The fate of threatened species under RFAs and RFA-accredited logging plans—NSW, Tasmania and Victorian examples

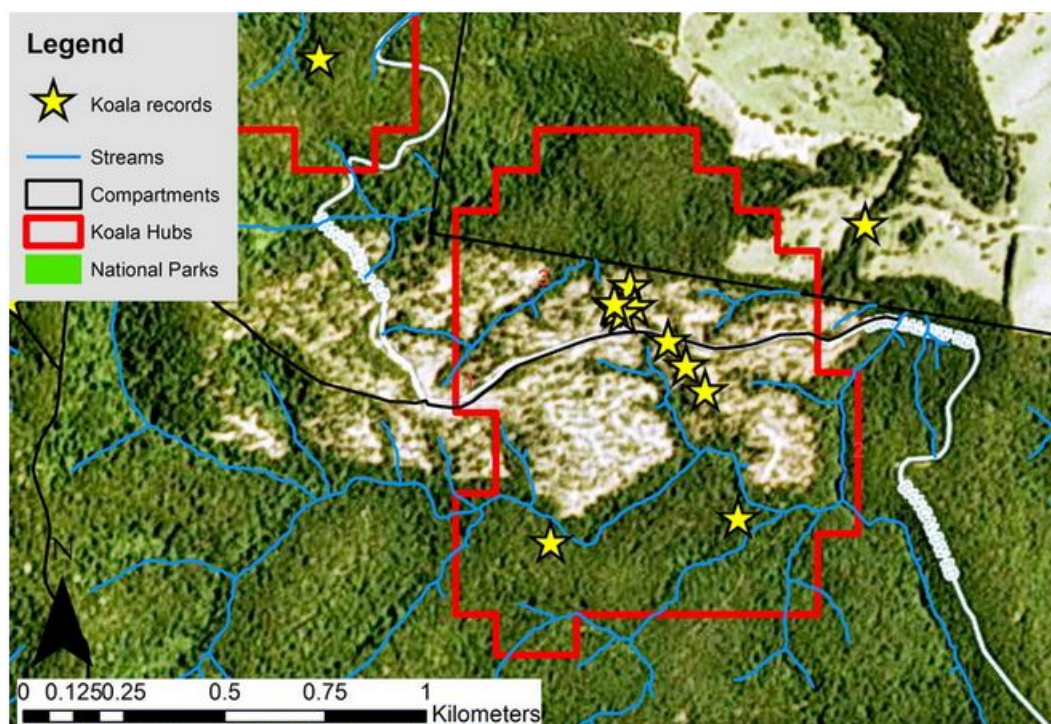
3.1 NSW: ‘Integrated Forestry Operations Approvals’ (IFOAs)

*“It is apparent that there is a comprehensive failure to incorporate nationally identified actions into NSW’s legislative controls for logging operations on public lands, private lands and plantations. All the alterations made to the NSW Integrated Forestry Operations Approvals (IFOAs), and associated licences since 1998, have been **aimed at reducing or removing protections for threatened species to make more areas and trees available for logging**. There has not been a single change aimed at implementing a recovery plan requirement or improving the protection for any threatened species (Pugh, D., 2018).”*

Of the 20 Federally-listed threatened animal species with species-specific protection requirements, the [NSW IFOA](#) proposal is to retain current prescriptions for 4 species, **reduce protections for 3 species**, and **remove protections for 13 species**. There are a multitude of other changes to prescriptions in the new IFOA that will significantly impact upon Federally threatened species, most notably including:

- Establishing a North Coast Intensive Logging Zone from Grafton to Taree over some 140,000ha of coastal forests where there will be no minimum basal area retention requirement, allowing clearfelling of extensive areas (including some 15,510ha (43%) of IFOA mapped ‘high quality Koala habitat’).
- Increasing logging intensity in the rest of State Forests by changing the requirement to retain 60% basal area and all trees >20cm diameter at breast height to retaining minimum basal areas of 10-12m², effectively reducing basal area retention by some 33-50% in most cases.
- Reducing riparian buffers on headwater streams in catchments less than 20ha (around 75% of all streams on State Forests) from mostly 10m down to 5m, affecting some 22,000km of streams outside existing exclusion areas north from the Hunter River (as well as removing species-specific buffers around streams for a variety of frogs, most notably the barred frogs, and the need to implement 10m buffers on headwater streams within 100km upstream of threatened fish).

- Setting the retention rate for hollow-bearing trees as up to 5 per hectare where they remain, removing the need to retain the next largest trees to increase retention to 5 per hectare in escarpment forests and where some threatened species occur, the need to increase retention to 8 hollow-bearing trees per hectare where there are >1 Greater Glider/ha within 3km of a Powerful Owl, and the need to retain all hollow-bearing trees within 100m of a Stephen's Banded Snake.
- Removing the requirement to protect one recruitment tree for each hollow-bearing tree retained (up to 5 per hectare), required to be sound and healthy mature to late-mature trees selected from the largest cohort.
- Removing the need to retain and protect 3 mature eucalypt nectar feed trees (of specified species) per hectare, increasing to 5 per hectare as the default prescription where Regent Honeyeater, Swift Parrot or Black-chinned Honeyeater are likely.
- Remapping stands of old growth and rainforest included as Informal Reserves in the Comprehensive, Adequate and Representative Reserve System using revised targets, criteria and methodologies to make most stands available for logging.



Satellite image of claimed selective logging of a Koala Hub in Wang Wauk State Forest in December 2018. Koalas cannot survive this intensity of logging in their core habitat. [NEFA 2019](#)

3.2 Victoria: State of the Forests Report documents species decline

The 2018 “[State of the Forests Report](#)” (SOFR), produced by the Victorian Commissioner for Environmental Sustainability, studies the impacts of ongoing logging under Victoria’s RFAs on that state’s threatened species and makes significant findings:

- Forest-dependent wildlife species are trending downwards, with concerns about the ability of species to maintain viable breeding populations.
- There has been a significant increase in species on the government’s Advisory List (of species at risk of extinction): in 2013, there were 461 species listed; in 2018 there were 497.
- The conservation status of mammals across Victoria is of particular concern, **with 40% of listed species being close to extinction.**
- In the Central Highlands—an area targeted for logging—a deterioration in the overall status of species has occurred. The number of species listed on the IUCN Red List has increased from 16 to 44 since 1990.

The table below, from the State of the Forests Report, shows the scale of the threat to Victoria's forest-dependent species, twenty years after the commencement of the RFAs:

Table 14. Number of forest-dependent species by conservation status, 2018

Species group	Extinct in the wild	Extinct	Regionally extinct	Critically endangered	Endangered	Vulnerable	Near threatened	Data deficient	Total
Amphibians				7	3	2		3	15
Birds				4	15	17	15		51
Fish				2		3	1		6
Invertebrates				5	7	12	1	9	34
Mammals	1	8	9	2	7	6	14	2	49
Reptiles				5	7	8	7		27
Vascular plants					4	10			14
Other flora					92	165	6	1	264
Total	1	8	9	25	135	223	44	15	460

(Data source: DELWP 2018)

3.3 Tasmania

In 2018, citizen scientists studied a planned logging coupe ('LU040F') in southern Tasmania and documented serious concerns about the impacts of planned logging on the Critically Endangered Swift Parrot, Vulnerable Masked Owl and Endangered Tasmanian Wedge-tailed Eagle.¹⁵

- Fieldwork on coupe LU040F found it to be high quality, mature habitat that represents critical potential breeding habitat for Swift Parrots. This finding was based on the guidelines for assessing habitat from the Tasmanian Forest Practices Authority.
- The neighboring coupe CM001B is considered likely to be of similar quality and, along with coupe LU040F and in accordance with respective Recovery Plans, has been recommended by the citizen scientists for protection as breeding habitat for Swift Parrots and Masked Owls.
- The CM001B coupe was scheduled for logging later in 2019 under a Three Year Plan completed before the recent bushfires destroyed much of the native forest estate south of Hobart. This is particularly important given the large losses of threatened species habitat from recent bushfires.
- As at March 2019, despite its habitat significance and Recovery Plan recommendations, logging has been brought forward for coupe CM001B.

Given the clear conflict between the known and predictable outcomes for threatened species of state-approved, RFA-accredited logging plans and the outcomes that are supposed to be delivered by the RFAs, the Federal Government must intervene and fully assess the existing impacts of the RFAs and any proposed new logging rules prior to any implementation.

Part 4: Legal cases, non-compliance and the role of the Federal Government

Since the RFAs were first implemented 20 years ago, conservation and citizen science groups, research scientists, legal centres and regulatory bodies have documented an extensive catalogue of breaches and

¹⁵ Report on a survey of coupe LU040F in the southern forests, proposed for logging in 2019. In Press.

non-compliance in relation to the RFA-accredited logging plans, codes of practice and operational guidelines that are supposed to govern logging operations within RFA forests across WA, Victoria, NSW and Tasmania.¹⁶

For example, to mark National Threatened Species day 2017, the Goongerah Environment Centre in Victoria, and others, released “[Lawless Logging](#)”, documenting 27 unlawful native forest logging operations in protected threatened species habitat and rainforest. The report states,

This report documents 27 cases of logging in East Gippsland and Victoria’s Central Highlands that have breached the state’s Code of Practice in areas that should have been protected by the Code’s environmental protection provisions. The cases this report presents have been documented in reports submitted to DELWP by community groups who have become increasingly concerned with DELWP’s ineffective regulatory practices.

Similar widespread breaches of RFA-accredited logging plans have been documented in northern NSW as set out in the North East Forest Alliance Submission to the Senate’s Inquiry into Australia’s Faunal Extinction Crisis (Submission #405). The submission, “Compliance of Forestry Operations in North East New South Wales with Commonwealth Requirements for Threatened Species and Ecosystems” demonstrates,

“[S]erious non-performance in the North East RFA area, including failure to implement forestry codes of practice, failure to implement recovery plans for threatened species, failure to establish management plans for CAR reserves, failure to implement or enforce the ESFM framework and failure to correct proven breaches of the RFA.”

Prompted by ongoing, community-documented reports of breaches and non-compliance, the NSW logging regulator, the NSW EPA, stated in its 2017-18 Annual Report:

In 2017/18 the EPA assessed 82% of high-risk operations (the remainder have since been assessed) and inspected 83 separate forestry operations through its full regulatory program. It issued 43 advisory letters, 18 formal warnings, 15 show causes, one clean up notice, 11 corrective action requests, 17 official cautions, one stop work order, 12 penalty notices and two PNF approval terminations.

In some cases, this evidence of widespread breaches of RFA-accredited logging rules has resulted in regulatory action and court cases. Some cases have been taken to court by the regulatory body and other court actions have been instigated by community groups.

In Victoria, the government regulator, DELWP, commenced legal action against VicForests but the case failed—sparking an [Independent Expert Review](#) into the clearly inadequate forest logging regulatory system in Victoria.¹⁷

The event that triggered this Review was the failure of a prosecution commenced by DELWP against VicForests. The prosecution, which concerned the Take Me Home coupe in East Gippsland, was commenced on 2 March 2018 under the SFT Act. The charge alleged that VicForests undertook timber harvesting operations in March 2016 without those operations being “authorised operations.”

The report presented to government by this Independent Review documents further allegations and cases brought by both regulators and community groups in their efforts to enforce compliance with RFA-accredited logging plans, codes and rules. The review recommends a complete overhaul of logging regulation in Victoria whilst acknowledging that higher level issues of policy, competing values and trade-offs remain unresolved at a government level.

¹⁶ See for example the comprehensive ‘[One Stop Chop](#)’ report from Australia’s Environmental Defenders Offices (2013).

¹⁷ Independent Review of Timber Harvesting Regulation (Victoria). Panel Report to the Secretary of DELWP. 2018.

A comprehensive report prepared in 2013 by Australia's Environmental Defenders Offices, [One Stop Chop: How Regional Forest Agreements Streamline Environmental Destruction](#), has also documented the legal, governance and regulatory failure of RFAs across Australia.

4.1 Enforcement of EPBC Act in relation to threatened species

In Victoria, [in a case that has been running for nearly two years](#), Friends of Leadbeater's Possum has taken the state's logging agency, VicForests, to the Federal Court arguing that its operations [breach Federal legal requirements in relation to threatened species](#).

Allegations that state logging agency VicForests failed to identify and protect Leadbeater's Possums, Greater Gliders and their habitat in accordance with the Central Highlands RFA are being presented by Environmental Justice Australia representing Friends of Leadbeater's Possum.

Commenting on a key interim ruling by the presiding Judge, Justice Mortimer,¹⁸ [Environmental Justice Australia](#) stated,

*The Federal Court has given hope for the protection of threatened species in a case questioning whether logging in endangered species habitat **can continue to have a special exemption from Federal environment law** [the so-called 'RFA exemption' from provisions of the EPBC Act].*

*The Court has found that **non-compliance with some terms in the RFA would remove that exemption**.*

*The Court rejected VicForests' argument that logging operations would be exempt from Federal environment law even if there's non-compliance with the RFA. The Court found VicForests **must comply with certain provisions of the RFA in order to receive the benefit of the exemption from Federal environment law**.*

Friends of Leadbeater's Possum is arguing that certain VicForests' logging operations are not exempt from Federal environment law (the EPBC Act), because those operations are not conducted in accordance with the Regional Forest Agreement (RFA) on which the exemption is based, due to non-compliance with terms in the RFA that require five-year reviews.

The full case was heard over several weeks in June 2019 with a final judgement expected in September 2019.

The widespread, systemic and serious breaches of and non-compliance with RFA-accredited logging plans and rules—and the extremely problematic attempts by community groups to monitor, uphold and enforce those plans and rules—demonstrates the urgent need for the Federal Government to act.

The Federal Government and Minister for Environment can no longer pretend that all is well in the forests, and that the states to which it has devolved its environmental responsibilities are fulfilling their obligations. As things stand at the moment, it's only community groups, usually acting at their own expense as volunteers, who are diligently attempting to enforce compliance by the government logging agencies and logging industry.

The next Australia Government must use all the powers at its disposal under the EPBC Act to uphold its published Threatened Species recovery plans and fulfil its international treaty obligations. If needs be, in the short-term, the Act should be amended to remove any doubt as to the Minister's and government's powers and obligations to act.

¹⁸ www.judgments.fedcourt.gov.au/judgments/Judgments/fca/single/2018/2018fca0178

Appendix 1: The total number of EPBC-listed, threatened, forest-dwelling species in Australia

According to the latest Federal Government ‘Australia’s State of the Forests Report’ (2018), which includes as “forest” mangroves, semi-arid callitris woodlands and the open savannah woodlands of northern Australia, there is a total of 1,420 listed threatened species—of all taxonomic groups, of which 157 are critically endangered. A further 68 species have been added to the national threatened species list over the past five years.

	A	B	C	D	E	F	G	H	I
1	Return to Index page								
2									
3	Table 1.43: Number of listed threatened forest-dwelling species, by taxonomic group, 2016								
4		Threatened							
5	Taxonomic group	Extinct	Critically Endangered	Endangered	Vulnerable	Total	Non-threatened	Total taxa^a	Proportion of taxa that are threatened (%)
6	Fish ^b	1	5	13	11	30	419	449	7
7	Amphibians	4	5	14	10	33	196	229	14
8	Reptiles	0	7	11	22	40	749	789	5
9	Birds	18	8	35	34	95	584	679	14
10	Mammals	20	6	33	50	109	264	373	29
11	Total vertebrates	43	31	106	127	307	2,212	2,519	12
12	Invertebrates	0	22	9	7	38	—^d	—	—
13	Vascular plants^c	30	104	411	529	1,074	—^d	—	—
14	Non-vascular plants	0	0	1	0	1	—^d	—	—
15	Total taxa	73	157	527	663	1,420	—	—	—
16	Proportion of total threatened forest-dwelling taxa	5%	11%	37%	47%	100%			

	A	B	C	D	E	F
1	Return to Index page					
2						
3	Table 1.49: Forest-dwelling species added to the national list of threatened species during the SOFR 2018 reporting period					
4	Taxa	Extinct	Critically Endangered	Endangered	Vulnerable	Total
5	Vertebrate fauna	0	8	10	15	33
6	Invertebrate fauna	0	3	3	1	7
7	Vascular plants ^a	0	17	8	3	28
8	Total	0	28	21	19	68

Tables source: Australia’s [‘State of the Forests Report’ \(SOFR\), 2018](#)

NOTE: In the tables above, the SOFR includes as ‘forest’ large areas of woodland outside the RFA regions—for example, the savannah woodlands and mangroves across northern Australia. By including open woodlands and mangroves as forest, the government is able to claim, in the SOFR that, “Australia has 122.6 million hectares of native forest of which [‘only’] 36.6 million hectares are available for commercial wood production.”

Appendix 2: Omission of Key Threatening Processes

The official EPBC Act list of [Key Threatening Processes](#) (KTPs) **omits direct logging-caused threatening processes** such as the removal of mature and old growth trees with hollows. Removal of such trees through logging is recognised as a KTP under NSW legislation.

Crucially, logging and logging-associated roading and burning also facilitate and exacerbate many of the KTPs that ARE listed under the EPBC Act.

Listed Key Threatening Processes		
Listed Key Threatening Process	Effective	View
Aggressive exclusion of birds from potential woodland and forest habitat by over-abundant noisy miners (<i>Manorina melanoccephala</i>)	09-May-2014	Details
Competition and land degradation by rabbits	16-Jul-2000	Details
Competition and land degradation by unmanaged goats	16-Jul-2000	Details
Dieback caused by the root-rot fungus (<i>Phytophthora cinnamomi</i>)	16-Jul-2000	Details
Incidental catch (bycatch) of Sea Turtle during coastal otter-trawling operations within Australian waters north of 28 degrees South	04-Apr-2001	Details
Incidental catch (or bycatch) of seabirds during oceanic longline fishing operations	16-Jul-2000	Details
Infection of amphibians with chytrid fungus resulting in chytridiomycosis	23-Jul-2002	Details
Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris	13-Aug-2003	Details
Invasion of northern Australia by Gamba Grass and other introduced grasses	16-Sep-2009	Details
Land clearance	04-Apr-2001	Details
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	08-Jan-2010	Details
Loss of biodiversity and ecosystem integrity following invasion by the Yellow Crazy Ant (<i>Anoplolepis gracilipes</i>) on Christmas Island, Indian Ocean	12-Apr-2005	Details
Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases	04-Apr-2001	Details
Novel biota and their impact on biodiversity	26-Feb-2013	Details
Predation by European red fox	16-Jul-2000	Details
Predation by exotic rats on Australian offshore islands of less than 1000 km ² (100,000 ha)	29-Mar-2006	Details
Predation by feral cats	16-Jul-2000	Details
Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs	06-Aug-2001	Details
Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species	04-Apr-2001	Details
The biological effects, including lethal toxic ingestion, caused by Cane Toads (<i>Bufo marinus</i>)	12-Apr-2005	Details
The reduction in the biodiversity of Australian native fauna and flora due to the red imported fire ant, <i>Solenopsis invicta</i> (fire ant)	02-Apr-2003	Details

Whilst the Commonwealth's 'Australia's State of the Forests Report' (ASOFR, 2018) acknowledges logging as a threat, it too fails to acknowledge that logging operations and logging-associated roading and burning also contribute to, facilitate and compound **most of the other listed threats**.

State of the Forests Report,
Commonwealth 2018

Table 1.45: Threat rating and threat categories for forest-dwelling threatened species, as at 2016 (Annotated)

Threat category	Number of species for which a threat in that category was specified			Total	Proportion of total specified threats (%)
	Primary threat	Secondary threat	Tertiary threat		
Fauna (invertebrate and vertebrate)					
Land-use change and/or forest loss ^a	87	45	6	238	17
Predation by introduced fauna EXACERBATED BY LOGGING	107	58	40	205	15
Mortality agents ^b EXACERBATED BY LOGGING	71	60	30	161	12
Small or localised population EXACERBATED BY LOGGING	127	20	10	157	11
Unsuitable fire regime ^c EXACERBATED BY LOGGING	64	56	20	140	10
Competition from introduced fauna ^d EXACERBATED BY LOGGING	41	63	15	119	9
Indirect invasive species impacts ^e EXACERBATED BY LOGGING	32	46	13	91	7
Disease and/or pathogens EXACERBATED BY LOGGING	31	18	27	76	6
Hydrological change EXACERBATED BY LOGGING	38	22	10	70	5
Forestry operations ^f	29	24	11	64	5
Climatic effects ^g EXACERBATED BY LOGGING	13	32	15	60	4

Key Threatening Processes as formally listed under EPBC Act—no mention of logging

Key threatening process: Loss of tree hollows

Although eucalypt forest covers only 8.3% of Australia, it supports 47% of all hollow-using vertebrates. Hence there is a strong concentration of hollow-using species in forests [1]. Many of these species are iconic and found nowhere else on earth including the Brush-tailed Phascogale; Yellow-bellied Glider; Greater Glider; Squirrel Glider and Leadbeater's Possum. The loss of hollows via logging has been identified as a threat to all of these species [2]. A minimum of 120 years is required for hollow formation in most eucalypt species and much longer for many [1]. Logging shifts the age-class distribution of trees from old, hollow-bearing trees to younger trees with fewer hollows [3]. The native forest logging industry is therefore incompatible with the retention of tree hollows, because it is not possible to have rotation durations that

allow the replacement of lost hollows. This is why logging has been repeatedly identified [including by experts advising the Victorian Forest Industry Taskforce], as a key factor driving the loss of tree hollows in Australia [4,5,6,7]. Logging leads to a loss of hollows and a loss of hollow-dependent wildlife.¹⁹

References on hollows

1. Gibbons, P. & Lindenmayer, D. B. Tree hollows and wildlife conservation in Australia. (CSIRO, 2002).
2. Woinarski, J. C. Z., Burbidge, A. A. & Harrison, P. L. The action plan for Australian Mammals 2012. (CSIRO, 2014).
3. Lunney, D. & Matthews, A. in Conservation of Australia's Forest Fauna (ed D. Lunney) 988-1021 (Royal Zoological Society of New South Wales, 2004)
4. Eyre, T. J., Butler, D. W., Kelly, A. L. & Wang, J. Effects of forest management on structural features important for biodiversity in mixed-age hardwood forests in Australia's subtropics. *Forest Ecology and Management* 259, 534-546, doi:<http://dx.doi.org/10.1016/j.foreco.2009.11.010> (2010).
5. NSW Scientific Committee. Loss of hollow-bearing trees—key threatening process determination, <<http://www.environment.nsw.gov.au/determinations/lossofhollowtreesktp.htm>> (2007).
6. Lindenmayer, D. B. et al. Interacting Factors Driving a Major Loss of Large Trees with Cavities in a Forest Ecosystem. *PLoS ONE* 7, e41864, doi:10.1371/journal.pone.0041864 (2012).
7. Lindenmayer, D. B. et al. New Policies for Old Trees: Averting a Global Crisis in a Keystone Ecological Structure. *Conservation Letters* 7, 61-69, doi:10.1111/conl.12013 (2014).

Appendix 3: High Conservation Value (HCV) categories

The Forest Stewardship Council (FSC), a leading certifier of wood products, has defined High Conservation Values of Australia's forests as follows:

Table 1. HCV categories under the FSC national standard of Australia

HCV #	Principal values	HCV components
HCV 1	<i>Species diversity</i>	Concentrations of biological diversity* including endemic species, and rare*, threatened* or endangered species, that are significant* at global, regional or national levels.
HCV 2	<i>Landscape*-level ecosystems* and mosaics</i>	Intact forest landscapes* and large landscape*-level ecosystems* and ecosystem* mosaics that are significant* at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.
HCV 3	<i>Ecosystems* and habitats*</i>	Rare*, threatened*, or endangered ecosystems*, habitats* or refugia*.
HCV 4	<i>Critical* ecosystem services*</i>	Basic ecosystem services* in critical* situations, including protection* of water catchments and control of erosion of vulnerable soils and slopes.
HCV 5	<i>Community needs</i>	Sites and resources fundamental for satisfying the necessities of local communities* or Indigenous Peoples* (for livelihoods, health, nutrition, water, etc.), identified through engagement* with these communities or Indigenous Peoples*.
HCV 6	<i>Cultural values</i>	Sites, resources, habitats* and landscapes* of global or national cultural, archaeological or historical significance, and/or of critical* cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities* or Indigenous Peoples*, identified through engagement* with these local communities* or Indigenous Peoples*.

Source: FSC national standard of Australia.

Note: asterisks (*) indicate defined terms in the national standard.

¹⁹ Regional Forest Agreements in NSW: Have they achieved their aims?; National Parks Association of NSW Inc. 2016.

ACKNOWLEDGEMENTS

Thank you to Margaret Blakers who provided the initial analysis of Federally-listed forest-dwelling threatened species. Thanks also to the photographers for the use of their images:

- Spotted Tailed Quoll: David Gallan
- Regent Honeyeater: Lochman Transparencies
- Western Ringtail Possum: Adrian Wayne/WA Dept. Parks and Wildlife
- Swift Parrot: Chris Tzaros
- Leadbeater's Possum: Justin Cally
- Barred Galaxias: Gunther Schmida
- Giant Freshwater Crayfish: Vica Bayley
- Koala: Keith Wheatley
- Forest Red-tailed Black Cockatoo: Keith Lightbody
- Giant Barred Frog: Jono Hooper
- Numbat: James Evans
- Spotted Tailed Quoll: Lochman Transparencies
- Greater Glider: H.Beste
- Powerful Owl: Ákos Lumnitzer
- Tasmanian Masked Owl: Dave Watts
- Green and Golden Bell Frog: Judith Deland
- Rufous Scrub-bird: Scott Baker/eBird.org
- Woman in logging coupe: Louise Chen

SELECTED REFERENCES

Compliance of Forestry Operations in NE NSW with Commonwealth Requirements for Threatened Species and Ecosystems. Submission to Senate Inquiry into Australia's Faunal Extinction Crisis – Submission #405. North East Forest Alliance (2018).

Submission #28 to the Senate Faunal Extinction Crisis Inquiry. Professor David Lindenmayer AO; Dr. Matthew H. Webb; Dr Dejan Stojanovic; Professor Robert Heinsohn; David Blair; Lachlan McBurney (2018). Fenner School of Environment and Society, The Australian National University, Canberra.

Submission to the Senate Extinction Inquiry #362, M. Blakers (2018).

One Stop Chop: How Regional Forest Agreements Streamline Environmental Destruction. Environmental Defenders Offices of Australia. 2013.

Regional Forest Agreements in NSW: Have they achieved their aims? National Parks Association of NSW Inc. 2016.

Pers Comm, M. Blakers, 2019. EPBC-listed threatened species.

Pers Comm, D. Pugh, 2018. Impacts of new NSW IFOAs on threatened species.

[Australia's State of the Forests Report 2018](#). Commonwealth of Australia.

[Victoria State of the Forests Report \(2018\)](#). Commissioner for Environmental Sustainability.

Department of Sustainability and Environment (2001) *Action Statement—Sooty Owl*, available at: https://www.environment.vic.gov.au/_data/assets/pdf_file/0028/32887/Sooty_Owl_Tyto_tenebricosa.pdf

The status of Large Forest Owls in Eastern Victoria. Report for the Forest Industry Taskforce, 2016.

Geyle, Hayley M., et al (2018) *Quantifying extinction risk and forecasting the number of impending Australian bird and mammal extinctions.* Pacific Conservation Biology, <https://doi.org/10.1071/PC18006>

Abandoned—Australia's Forest Wildlife in Crisis

March 2019

© The Wilderness Society Ltd

Suite 201/46 Kippax St, Surry Hills NSW 2010

