

# Environmental Threats of National Significance



| LAND CLEARING

**THREATS**  
TO NATURE  
PROJECT





“Without clear policies to regenerate degraded forests and protect existing tracts at a massive scale, Australia stands to lose a large proportion of its remaining endemic biodiversity.”

– Bradshaw (2012)<sup>1</sup>

**A**ustralia is one of the world's 11 deforestation hotspots.<sup>2</sup> More than 10 million hectares have been cleared since 2000, including 3 million hectares of remnant forests, mostly eucalypt woodlands (Figure 1). Most was in Queensland for beef production (Figure 2).

At the time of European colonisation, about 30% of Australia (235 million hectares) was covered by forests (vegetation dominated by trees taller than 2 metres). About 45% (more than 100 million hectares) of this has been cleared, and much of what remains has been degraded (Figure 3).<sup>3</sup>

Much of Victoria, New South Wales, South Australia and south-west Western Australia was substantially cleared by the early 20th century. In recent decades, most clearing has occurred in Queensland, and attention is now shifting to the tropical savannas, with grand ambitions for dams and large-scale irrigated cultivation of cotton, fodder and horticultural crops. Agricultural development of the north 'has been variously described as the last frontier, the new frontier and the next frontier', with an estimated irrigation potential of 1.4 million hectares from surface water storage.<sup>4</sup>

Australia State of the Environment 2016 concluded that the extent and condition of vegetation are 'poor' in intensive land use zones (eastern, south-eastern and south-western Australia) and 'good' (but suboptimal) outside these zones. Both the extent and condition of vegetation are deteriorating across Australia, as documented in all state of the environment reports since the first in 1996.

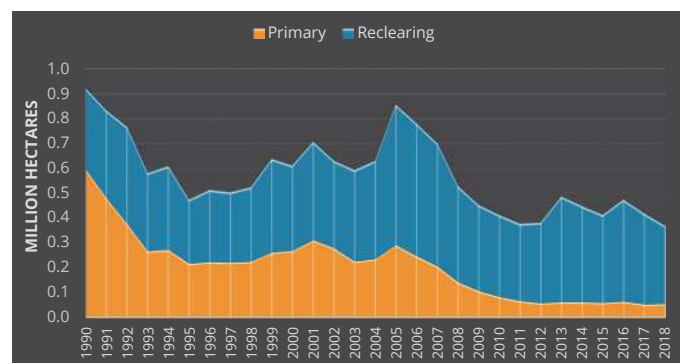


Figure 1. Rates of clearing, primary (at least 30 years old) and non-primary forest, Australia 1990-2018.

Source: Australian Greenhouse Emissions Information System<sup>5</sup>

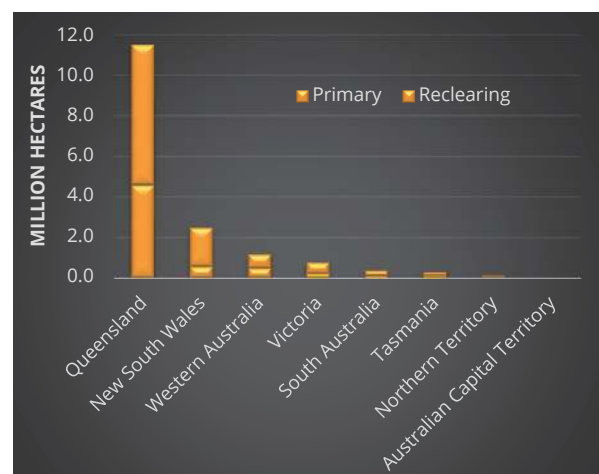


Figure 2. Rates of clearing, primary (at least 30 years old) and non-primary forest, 1990-2018.

Source: Australian Greenhouse Emissions Information System<sup>5</sup>

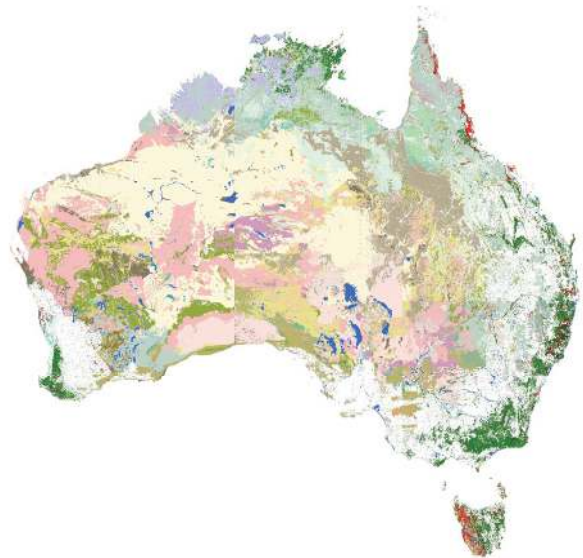
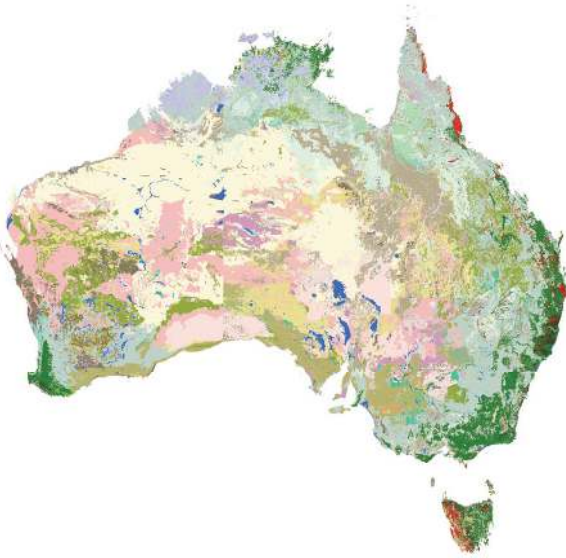
**ESTIMATED PRE-1750**
**CURRENT**


Figure 3. Major vegetation groups Australia.

Source: National Vegetation Information System V5.1 © Australian Government Department of Agriculture, Water and the Environment 2018. Creative Commons Attribution 3.0 Australia License.

## WHY LAND CLEARING IS A THREAT TO NATURE

**Land clearance was listed as a key threatening process in 2001 under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).**

Clearing has been the main cause of 36 of 100 confirmed extinctions of Australian species – mainly plants and invertebrates<sup>7</sup> – and more than 1100 threatened species (61% of the total listed under the EPBC Act) are seriously impacted by habitat destruction.<sup>8</sup> Since 2000 (the year the EPBC Act commenced), at least 7.7 million hectares likely to have been the habitat of threatened species have been cleared and 85% of listed terrestrial species have experienced some habitat loss.<sup>8</sup>

Land clearing causes declines and extinctions by:<sup>6,9,10</sup>

- killing plants and animals
- destroying and fragmenting habitats
- triggering erosion, dryland salinity and acidification
- degrading freshwater and marine habitats
- disrupting ecological processes such as pollination and migration
- exacerbating climate change
- facilitating weed and feral animal invasions
- facilitating overabundance of noisy miners (a key threatening process) and other native species.

Australia has accrued an 'extinction debt', due to the time lag, often of decades, between habitat degradation and local extinctions. In fragmented woodlands, for example, birds such

as hooded robins are progressively being lost even where there has been little clearing in the past century.<sup>10,11</sup>

## IMPACTS ON OTHER SECTORS

The degradation of soils due to land clearing has major agricultural impacts. Carbon levels are low in Australian soils, particularly in agricultural areas, where clearing typically reduces soil carbon by 20-70%.<sup>6</sup> About half of Australia's agriculturally productive soils are affected by acidification, some 6 million hectares are affected by dryland salinity, and the rates of soil erosion across much of Australia exceed the rates of soil formation by an order of magnitude or more.<sup>6</sup>

Land clearing has degraded valuable tourism assets in Australia such as the Great Barrier Reef and rainforests. Sediments from erosion caused by land clearing smother coral and seagrass beds, and increased nutrients render corals more susceptible to bleaching.<sup>12</sup> In these ways, clearing also degrades the habitats of species important to recreational and commercial fishers. The Great Barrier Reef Marine Park sustains a tourism industry worth more than \$6 billion a year and supports about 64,000 jobs.<sup>13</sup>

## THREAT ABATEMENT EFFORTS

### National abatement planning

At the time of the KTP listing, the federal, state and territory governments had committed themselves, through the Natural Heritage Trust, to deliver no net loss of native vegetation by June 2001. This goal was not met.

There was also a 2001 National Framework for the Management and Monitoring of Australia's Native Vegetation,



which was revised in 2012. This framework has 5 goals to meet its vision of 'native vegetation is managed in an ecologically sustainable way that promotes its enduring environmental, economic, social, cultural and spiritual values':

- **Goal 1.** Increase the national extent and connectivity of native vegetation
- **Goal 2.** Maintain and improve the condition and function of native vegetation
- **Goal 3.** Maximise the native vegetation benefits of ecosystem service markets
- **Goal 4.** Build capacity to understand, value and manage native vegetation
- **Goal 5.** Advance the engagement and inclusion of Indigenous peoples in management of native vegetation.

The framework contains no explicit commitments and has had little or no influence over vegetation laws and policies.

The EPBC Act has also largely failed to protect threatened species and ecological communities from land clearing. A 2019 analysis found that of 7.7 million hectares of potential habitat for threatened species and ecological communities and migratory species cleared between 2000 and 2017, 93% had not been assessed under the Act for its impacts on these matters of national environmental significance.<sup>8</sup>

## State and territory laws

The major influence over the extent of land clearing in Australia is the effectiveness of state and territory vegetation laws. These laws were mostly strengthened during the 1990s and 2000s, but several were weakened again during the 2010s by enabling self-regulation and voluntary compliance.<sup>14</sup> During the 5 years from 2014 to 2018 (the most recent years for which national data is available) more than 90% of clearing occurred in three states – Queensland (69%), New South Wales (15%) and Western Australia (7%) – mostly for agriculture.<sup>5</sup>

In Queensland, a 2006 ban on broad-scale clearing of remnant vegetation substantially slowed clearing, and in 2009 high-value regrowth forests were also protected. But clearing surged again from 2013 when the Vegetation Management Act was weakened, including to allow clearing for 'high value' agriculture.<sup>14</sup> Although the Act was strengthened again in 2018, substantial clearing continues, including of threatened species habitat and endangered forest types. More than 250,000 hectares were cleared in 2018, including about 40,000 hectares of primary vegetation (more than 30 years old).<sup>5</sup>

About 70,000 hectares was cleared in NSW in 2018, including 12,000 hectares of primary vegetation.<sup>5</sup> A weakening of laws in 2017 resulted in a 60% increase.

The weakest vegetation laws are in the Northern Territory.

Although little clearing has occurred there, there have been recent approvals for large-scale clearing on pastoral properties to grow crops.

## Threat abatement progress

Despite land clearing being listed as a KTP and acknowledged as one of the greatest causes of biodiversity loss, the Australian Government has failed to use its powers under the EPBC Act to protect threatened species habitat and ecological communities from clearing. The impacts of land clearing have considerably worsened since the KTP listing in 2001.

## Threat abatement priorities

Stopping land clearing will likely require stronger federal, state and territory laws and abating the threat of habitat loss will require ambitious restoration efforts. Priorities over the next decade should include:

- **Strictly protect the habitat of threatened species and ecological communities:** To achieve this will likely require a much more rigorous application of the EPBC Act or stronger state and territory laws.
- **Make land clearing a matter of national environmental significance under the EPBC Act:** This would enable federal assessments of clearing above specified thresholds (a land clearance 'trigger').
- **Strengthen protection of remnant forests and high-value regrowth:** Only under exceptional circumstances should any more of Australia's remnant or high-value regrowth forests be cleared, particularly in substantially cleared bioregions.
- **Aim for substantial net forest gain:** This will benefit biodiversity and help Australia achieve climate change targets.
- **Promote restoration in high-priority areas:** Restoring forests to reduce fragmentation and degradation and increased habitat for threatened species will be necessary to avert extinctions and restore ecological processes.

## References

1. Bradshaw, C. J. A. Little Left to Lose: Deforestation and Forest Degradation in Australia since European Colonization. *J Plant Ecol* **2012**, 5 (1), 109–120. <https://doi.org/10.1093/jpe/rtr038>.
2. World Wildlife Fund. Living Forests Report Chapter 5: Saving Forests at Risk; 2015.
3. ABARES. Australia's forests – overview <https://www.agriculture.gov.au/abares/forestsaustralia/profiles/australias-forests-2019> (accessed Oct 27, 2020).
4. Ash, A.; Gleeson, T.; Hall, M.; Higgins, A.; Hopwood, G.; MacLeod, N.; Paini, D.; Poulton, P.; Prestwidge, D.; Webster, T. Irrigated Agricultural Development in Northern Australia: Value-Chain Challenges and Opportunities. *Agricultural Systems* **2017**, 155, 116–125.
5. Department of Industry, Science, Energy and Resources. Australian Greenhouse Emissions Information System. Data tables <https://ageis.climatechange.gov.au/QueryAppendixTable.aspx>.
6. Metcalfe, D.; Bui, E. *Australia State of the Environment 2016: Land*; Australian Government Department of the Environment and Energy: Canberra, **2017**.
7. Woinarski, J.; Braby, M.; Burbidge, A.; Coates, D.; Garnett, S.; Fensham, R.; Legge, S.; McKenzie, N.; Silcock, J.; Murphy, B. Reading the Black Book: The Number, Timing, Distribution and Causes of Listed Extinctions in Australia. *Biological Conservation* **2019**, 239, 108261.
8. Ward, M. S.; Simmonds, J. S.; Reside, A. E.; Watson, J. E.; Rhodes, J. R.; Possingham, H. P.; Trezise, J.; Fletcher, R.; File, L.; Taylor, M. Lots of Loss with Little Scrutiny: The Attrition of Habitat Critical for Threatened Species in Australia. *Conservation Science and Practice* **2019**, 1 (11), e117.
9. Cresswell, I.; Murphy, H. Australia State of the Environment 2016: Biodiversity, Independent Report to the Australian Government Minister for the Environment and Energy. *Australian Government Department of the Environment and Energy: Canberra, ACT* **2017**.
10. Neldner, J. The Impacts of Land Use Change on Biodiversity in Australia. In *Land Use in Australia – Past, Present and Future*; **2018**; pp 115–125.
11. Ford, H. A.; Walters, J. R.; Cooper, C. B.; Debus, S. J.; Doerr, V. A. Extinction Debt or Habitat Change?—Ongoing Losses of Woodland Birds in North-Eastern New South Wales, Australia. *Biological conservation* **2009**, 142 (12), 3182–3190.
12. Brodie, J.; Kroon, F.; Schaffelke, B.; Wolanski, E.; Lewis, S.; Devlin, M.; Bohnet, I.; Bainbridge, Z.; Waterhouse, J.; Davis, A. Terrestrial Pollutant Runoff to the Great Barrier Reef: An Update of Issues, Priorities and Management Responses. *Marine Pollution Bulletin* **2012**, 65 (4–9), 81–100.
13. Deloitte Access Economics. *Economic Contribution of the Great Barrier Reef*; Great Barrier Reef Marine Park Authority, **2013**.
14. Evans, M. C. Deforestation in Australia: Drivers, Trends and Policy Responses. *Pacific Conservation Biology* **2016**, 22 (2), 130–150. <https://doi.org/10.1071/PC15052>.



If Australians are to protect what is most distinctive about this country – our unique plants, animals and ecological communities – we urgently need to overcome the key threats facing them.

It is not possible to recover all of our threatened species one by one through species-focused efforts. We also need a concerted national focus to overcome the major threats our native plants and animals have in common – in particular **invasive species, climate change, habitat destruction, adverse fire regimes and changes to natural water flows.**

Australia's threat abatement system needs to be more ambitious, better funded and nationally coordinated.