

# Science for Saving Species

## Research findings factsheet

Project 2.4



National Environmental Science Programme

## Plants Red Hot List: Australia's 100 most endangered plants

### Key Messages

Australia's appalling record of recent mammal extinctions is well-documented, and these have been the subject of numerous continental-scale reviews.

There has been no comparable continent-scale investigation for Australia's flora, despite plants comprising 72% of the total EPBC Act threatened species list, with 1308 listed species. A further 370 plant species are listed as Critically Endangered or Endangered at a State level but not listed federally, with more than ten times that number considered Vulnerable, Rare, Near Threatened or Priority Flora at State levels.

We developed a 'Red Hot list' of Australia's most imperilled plants, through the rigorous application of simple criteria and using the best available published and

expert information from more than 120 botanists and land managers.

To be considered, species must meet IUCN criteria for listing as Endangered or Critically Endangered AND be experiencing ongoing declines due to explicitly identified threatening processes that could be mitigated through targeted recovery actions. From a short-list of 420 species meeting these criteria, a 'Hottest 100' of Australia's most endangered plants was identified.

The species fall into 21 categories called flagship groups, based on key threats, regions or plant types. These flagship groups represent the most endangered types of plants in Australia. The Red Hot List plants within each flagship groups can act as champions to raise the profile of their group.

This factsheet presents the Hottest 100 list grouped within their flagship groups.

A National Action Plan for Australia's most imperilled plants will provide more detail on conservation actions, and can guide future investment, policy, community engagement and regional conservation efforts to improve the trajectories of our most imperilled flora.

Many poorly known species are also at risk, but a lack of information impedes conservation assessments and action. The National Action Plan will also identify a priority 'Amber' list of poorly known species considered at risk of extinction as well as the actions needed to determine their conservation status.



*Thelymitra cyanapicata* Fleurieu Peninsula.  
Photo: Bob Bates



*Banksia fuscobractea*.  
Photo: Andrew Crawford



*Ballantinia antipoda*.  
Photo: Paul Foreman

## Australia's Hottest 100 Plants, sorted by Flagship groups

Flagship groups and species for the Red Hot list. These are not mutually exclusive, and some species may fit into more than one flagship group. Where there are multiple representatives of genera in a flagship, genus name is abbreviated after the first record. States where the species occurs are shown where this is not obvious from the flagship group. Species from different states are separated by semi-colons.

Candidate taxa include all those listed as Endangered or Critically Endangered under State and/or Federal legislation, plus unlisted taxa identified by experts as meeting the criteria for listing.

Flagship group	Candidate species (declining)	No. Red Hot	Red Hot species
1. Ground orchids with small, fragmented populations	233 (94)	15	<b>WA:</b> <i>Caladenia busselliana</i> ; <b>TAS:</b> <i>C. anthracina</i> , <i>Prasophyllum tunbridgense</i> ; <b>SA:</b> <i>Eriochilus paludosus</i> , <i>P. laxum</i> , <i>Prasophyllum murfetii</i> , <i>Pterostylis psammophila</i> , <i>Spiranthes elytra</i> , <i>Thelymitra cyanapicata</i> ; <b>VIC:</b> <i>Caladenia pumila</i> , <i>Prasophyllum correctum</i> ; <b>NSW:</b> <i>Calochilus pulchellus</i> , <i>Corunastylis insignis</i> , <i>Diuris byronensis</i> ; <b>QLD:</b> <i>Cooktownia robertsii</i>
2. South-west WA remnants	189 (115)	16	<i>Acacia volubilis</i> , <i>Austrostipa jacobiana</i> , <i>Banksia cuneata</i> , <i>B. fuscobracteata</i> , <i>B. ionthocarpa</i> , <i>Darwinia whicherensis</i> , <i>Daviesia bursarioides</i> , <i>D. cunderdin</i> , <i>Eremophila pinnatifida</i> , <i>E. subangustifolia</i> , <i>Grevillea calliantha</i> , <i>G. involucreta</i> , <i>G. sp. Gillingarra</i> , <i>Ptilotus pyramidatus</i> , <i>Synaphea stenoloba</i> , <i>S. sp. Pinjarra Plain</i>
3. South-East Australia remnants (SA, VIC)	93 (49)	10	<i>Bossiaea peninsularis</i> , <i>Caladenia macroclavia</i> , <i>Eriochilus paludosus</i> , <i>Hibbertia tenuis</i> , <i>P. laxum</i> , <i>Prasophyllum murfetii</i> , <i>Pterostylis psammophila</i> , <i>Spiranthes elata</i> , <i>Spyridium furculentum</i> , <i>Thelymitra cyanapicata</i>
4. Fertile grasslands and open grassy woodlands	99 (50)	9	<b>VIC:</b> <i>Ballantinia antipoda</i> , <i>Caladenia pumila</i> , <i>Geranium sp. 1</i> ('carolinianum'), <i>Euphrasia scabra</i> , <i>Prasophyllum correctum</i> , <i>Senecio behrianus</i> ; <b>TAS:</b> <i>Caladenia anthracina</i> , <i>Prasophyllum tunbridgense</i> (TAS); <b>QLD:</b> <i>Solanum orgadophilum</i>
5. Highly urbanised and growth areas	109 (79)	21	<b>Sydney:</b> <i>Banksia vincentia</i> , <i>Calochilus pulchellus</i> , <i>Corunastylis insignis</i> , <i>Eucalyptus sp. Cattai</i> , <i>Grevillea caleyi</i> , <i>Hibbertia spanantha</i> , <i>Persoonia hirsuta</i> , <i>Prostanthera marifolia</i> ; <b>South East QLD:</b> <i>Brachychiton sp. Ormeau</i> , <i>Croton mamillatus</i> , <i>Gossia gonoclada</i> , <i>Grevillea hodgei</i> , <i>Zieria exsul</i> ; <b>Perth:</b> <i>Austrostipa jacobiana</i> , <i>Caladenia busselliana</i> , <i>Grevillea sp. Gillingarra</i> , <i>Ptilotus pyramidatus</i> , <i>Synaphea sp. Pinjarra</i> ; <b>Melbourne:</b> <i>Caladenia pumila</i> , <i>Geranium sp. 1</i> ; <b>Darwin:</b> <i>Typhonium taylori</i>
6. Phytophthora (dieback fungus)	40 (31)	12	<b>WA:</b> <i>Andersonia axilliflora</i> , <i>Banksia montana</i> , <i>Darwinia collina</i> , <i>Daviesia glossosema</i> , <i>Isopogon uncinatus</i> , <i>Lambertia fairallii</i> , <i>Leucopogon gnaphalioides</i> , <i>Persoonia micrantha</i> ; <b>NSW:</b> <i>Banksia vincentia</i> , <i>Hibbertia circinata</i> ; <b>VIC:</b> <i>Spyridium furculentum</i> , <i>Sphaerobolium acanthos</i>
7. Myrtle rust, east coast	10 (10)	4	<b>South East QLD:</b> <i>Gossia gonoclada</i> , <i>Lenwebbia sp. (Main Range)</i> , <i>Lenwebbia sp. (Blackall Range)</i> ; <b>QLD/NSW:</b> <i>Rhodomyrtys psidioides</i>
8. South Eastern Queensland bioregion (includes northern NSW)	116 (55)	16	<b>Rainforest:</b> <i>Antrophyum austroqueenslandicum</i> , <i>Diospyros mabacea</i> , <i>Elaeocarpus sedentarius</i> , <i>Lenwebbia sp. (Main Range)</i> , <i>Gossia gonoclada</i> , <i>Graptophyllum reticulatum</i> , <i>Lenwebbia sp. (Blackall Range)</i> , <i>Myrsine richmondensis</i> , <i>Ochrosia moorei</i> , <i>Selaginea andrewsii</i> ; <b>Dry scrubs:</b> <i>Alectryon ramiflorus</i> , <i>Brachychiton sp. Ormeau</i> , <i>Croton mamillatus</i> ; <b>Coastal heath:</b> <i>Diuris byronensis</i> , <i>Zieria exsul</i> ; <b>Montane:</b> <i>Grevillea hodgei</i>

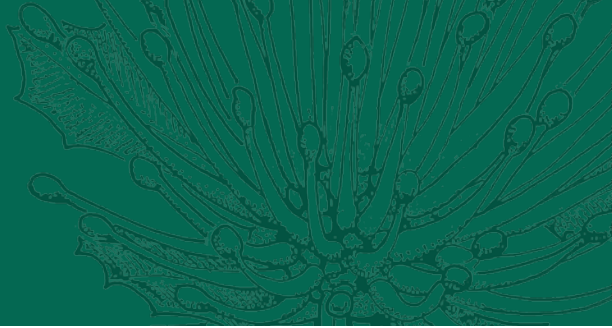
*Ptilotus brachyanthus*.  
Photo: Jen Silcock



Flagship group	Candidate species (declining)	No. Red Hot	Red Hot species
9. Brigalow Belt	44 (15)	2	<i>Decaspermum struckoiligum</i> , <i>Solanum dissectum</i>
10. Wetlands in modified environments	52 (27)	4	<b>NSW:</b> <i>Gentiana bredboensis</i> ; <b>VIC/NSW:</b> <i>Ballantinia antipoda</i> , <i>Senecio behriannus</i> ; <b>WA:</b> <i>Ptilotus pyramidatus</i> ;
11. Desert springs, QLD	11 (4)	1	<i>Eryngium fontanum</i>
12. Islands	42 (10)	5	<b>Norfolk:</b> <i>Elatostema montanum</i> , <i>Wikstroemia australis</i> ; <b>Lord Howe:</b> <i>Lepidorrhachis mooreana</i> ; <b>Macquarie:</b> <i>Azorella macquariensis</i> ; <b>Tiwi:</b> <i>Typhonium mirabile</i>
13. Weedy grasses, northern Australia	18 (5)	4	<b>QLD:</b> <i>Ptilotus brachyanthus</i> , <i>Solanum dissectum</i> , <i>Solanum orgadophilum</i> ; <b>SA:</b> <i>Swainsona dictyocarpa</i>
14. Wet Tropics/ Cape York forests	59 (7)	2	<i>Cooktownia robertsii</i> , <i>Phlegmariurus dalhousieanus</i>
15. Mountain-top endemics	153 (31)	10	<b>NSW:</b> <i>Hibbertia circinata</i> ; <i>Pimelea bracteata</i> , <i>P. cremnophila</i> , <i>P. venosa</i> , <i>Prostanthera gilesii</i> , <i>Pultenaea</i> sp. Genowlan Point; <b>QLD:</b> <i>Grevillea hodgei</i> ; <b>VIC:</b> <i>Kelleria bogongensis</i> , <i>Sphaerolobium acanthos</i> ; <b>TAS:</b> <i>Tetradlea gunnii</i>
16. Herbivore grazing and trampling*	222 (99)	9*	<b>NSW/SA:</b> <i>Acacia carneorum</i> ; <b>QLD/NSW:</b> <i>Diospyros mabacea</i> ; <b>NSW:</b> <i>Myrsine richmondensis</i> , <i>Gentiana bredboensis</i> , <i>Pimelea cremnophila</i> , <i>P. venosa</i> ; <b>VIC:</b> <i>Sphaerolobium acanthos</i> ; <b>SA:</b> <i>Prasophyllum murfetii</i> ; <b>TAS:</b> <i>Phebalium daviesii</i> ,
17. Inappropriate fire/ disturbance regimes (documented impact on species)	133 (53*)	19	<b>WA:</b> <i>Acacia pharangites</i> , <i>A. volubilis</i> , <i>Banksia cuneata</i> , <i>B. ionthocarpa</i> , <i>Grevillea calliantha</i> , <i>G. involucrata</i> , <i>Marianthus paralius</i> ; <b>QLD:</b> <i>Cooktownia robertsii</i> , <i>Decaspermum struckoiligum</i> , <i>Solanum orgadophilum</i> , <i>Zieria exsul</i> ; <b>NSW:</b> <i>Diuris byronensis</i> , <i>Eucalyptus</i> sp. <i>Cattai</i> , <i>Grevillea caleyi</i> , <i>Hibbertia spanantha</i> , <i>Myrsine richmondensis</i> , <i>Persoonia hirsuta</i> ; <b>TAS:</b> <i>Tetradlea gunnii</i> <b>Norfolk Island:</b> <i>Elatostema montanum</i>
18. Mining and mining expansion	39 (19)	3	<b>QLD:</b> <i>Eryngium fontanum</i> , <i>Solanum orgadophilum</i> ; <b>NT:</b> <i>Typhonium taylori</i>
19. Climate change	100 (31**)	5	<b>VIC:</b> <i>Ballantinia antipoda</i> , <i>Kelleria bogongensis</i> ; <b>WA:</b> <i>Commersonia erythrogyna</i> ; <b>Lord Howe Island:</b> <i>Lepidorrhachis mooreana</i> ; <b>TAS:</b> <i>Eucalyptus morrisbyi</i>
20. Arid shrubs, limited recruitment	6 (6)	1	<i>Acacia carneorum</i> (NSW/SA)
21. Enigmatic and cryptic species...	41 (9)	4	<b>VIC:</b> <i>Euphrasia scabra</i> ; <b>WA:</b> <i>Marianthus paralius</i> ; <b>QLD:</b> <i>Ptilotus brachyanthus</i> ; <b>NSW:</b> <i>Pomaderris delicata</i>

\* Many species are declining from a complex suite of threats and causes, with grazing/trampling (includes domestic livestock, feral herbivores and/or native herbivores) or inappropriate disturbance regimes only one factor in their demise, or only affecting some sites. Only species where this is a major threat to their survival are included in this flagship

\*\* Potential threat for many species, but few documented current declines due solely to climate change.



## Location of Australia's declining flora

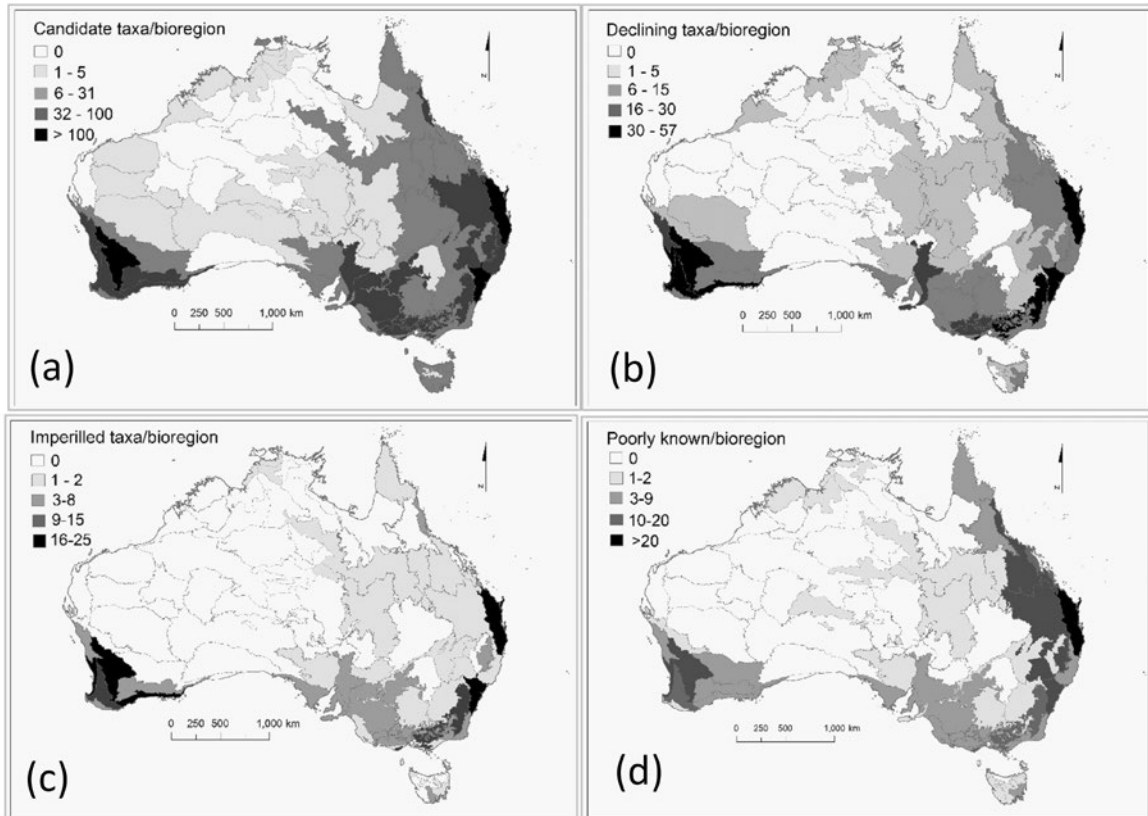


Figure 1. Numbers of (a) candidate (listed as *Endangered* or *Critically Endangered* under State and/or Federal legislation, plus unlisted taxa identified by experts as meeting the criteria for listing) (b) declining (documented, suspected or projected), (c) imperilled (declines in all populations and low numbers, typically <2500 individuals) and (d) poorly known taxa per bioregion. Two island bioregions (Subtropical Islands, encompassing Lord Howe and Norfolk, and Subantarctic Islands including Macquarie) have numerous taxa, including 5 and 2 declining and 3 and 1 Red Hot respectively, but are not visible on the map due to their small size.



*Darwinia whicherensis*.  
Photo: Andrew Webb

### Reference

Silcock, J.L., Fensham, R.J. (2018) Using evidence of decline and extinction risk to identify priority regions, habitats and threats for plant conservation in *Australia*. *Australian Journal of Botany*, Vol. 66, pp. 541–555.

### Further Information

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