Conservation Status Assessment Summary

Dingo

Taxon ID: 61835

In 2021, the dingo (Canis lupus dingo) was listed as 'Vulnerable in Victoria' under the *Flora and Fauna Guarantee Act 1988*.

Assessment Summary

The Conservation Status of dingoes was assessed again in 2024 in response to new genetic research and information about dingo populations in Victoria

The dingo is still eligible to be listed as 'Vulnerable in Victoria', because:

- **The current population is fewer than 10,000 mature individuals.**
- **The population has likely been reduced by at least 30% over the past 15 years.**
- **The population decline is expected to continue by at least 10% over the next 15 years under current threats.**

Dingoes in the Big Desert, north west Victoria. Source: Daniel Hunter

Acknowledgement of Cultural Significance

Dingoes are a culturally identified species for many Victorian Traditional Owners. Dingoes feature prominently in stories and songlines and are described as having an intrinsic (totemic) relationship with many Traditional Owner groups. Traditional Owners have a holistic understanding of Country, and dingoes are an important part of many cultural landscapes.

Species information

Dingoes are Victoria's largest native apex predator. They typically weigh 13-24 kg, with males generally heavier than females. They stand about 52-63 cm tall and have a variety of coat colors. Dingoes have a lean body, pricked ears, and a bushy tail.

Dingoes form social packs of 3-12 individuals. Pack size varies with population density, food availability, and territory availability. Only the dominant, or alpha, female, breeds. Females reach sexual maturity at 2-3 years, while males mature at 1-3 years. Wild dingoes live for about 7-10 years and captive individuals can live longer.

Habitat and ecology

Across Australia, the dingo occupies a wide variety of environments from arid grasslands to wet forests and alpine snowfields (Corbett 2003). Historically, the dingo likely occupied most habitats throughout Victoria. Today however, dingoes only occur in dry and wet forest, sub-alpine woodland, coastal heath in eastern Victoria and scrub and mallee woodland in north-western Victoria.

The dingo is a highly adaptable carnivore, with a flexible diet. Primary food sources include wombats, kangaroos and wallabies. Dingoes also eat birds, reptiles, fruits, and insects.

Threats

The dingo has been affected by a combination of threats in Victoria. Some, like habitat loss and fragmentation and lethal control are ongoing threats. Genetic decline and climate change are emerging threats.

Habitat loss and fragmentation

Habitat loss and fragmentation has reduced the available area for dingo in Victoria. Most dingo populations in south-eastern Australia are declining or becoming locally extinct (Corbett 2004). Dingoes avoid urban areas and are subject to lethal control in farming landscapes. The remaining Victorian dingoes are restricted to landscapes with extensive public land, such as the Big Desert in the northwest and the forests of eastern Victoria.

Lethal control

In areas where they have been unprotected, dingoes in Victoria are subject to the direct and indirect impacts of lethal control to protect livestock.

Genetic decline

Genetic diversity is declining in Victorian dingoes. Experts predict that the genetic decline will worsen over time. Low and declining genetic diversity increases the risk of fertility and survival issues (called inbreeding depression) and reduces the ability of populations to adapt to diseases and environmental change.

The north-western subpopulation is very small and isolated and has extremely low genetic diversity, with emerging signs of physical deformities likely caused by inbreeding. This subpopulation is at high risk of extinction without conservation action.

Hybridisation with domestic dogs used to be considered a threat to dingoes. Current evidence shows hybridisation between dingoes and domestic dogs is very rare in the wild (Cairns *et al.* 2023; Weeks *et al., submitted*).

Climate change

Climate change increases the risk of significant droughts and severe fire events. Dingoes in the semi-arid north-west are at risk from drought as the landscape already contains very little surface water. Dingoes are highly mobile apex predators and are likely to be resilient to most bushfire events. However, high-severity major fire events have the potential to cause direct mortality and remove the refugia and food sources required to sustain animals in a burnt landscape.

Summary of Conservation Status Assessment

The dingo is still eligible to be listed as ‘Vulnerable in Victoria’, because the current population is fewer than 10,000 mature individuals, the population has likely been reduced by at least 30% over the past 15 years and population decline is expected to continue by at least 10% over the next 15 years under current threats.

IUCN assessment criteria	Critically Endangered	Endangered	Vulnerable	Dingo in Victoria
Population size reduction A				
Population reduction in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible A2	≥ 80%	≥ 50%	≥ 30%	Population reduction over the last three generations (15-16.5 years) is estimated to be at least 30%
Population reduction in both the past and the future (up to a mx. of 100 years in future) and where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible A4	≥ 80%	≥ 50%	≥ 30%	Population reduction is expected to continue at the current, or increasing rate, due to ongoing threats, and is therefore estimated to be at least 30% over a three-generation window (15-16.5 years) that spans both the past and the future (2011 to 2025-2027)
Small population size and decline C				
Number of mature individuals capable of breeding This estimate takes into account the social breeding system of the dingo which excludes some mature individuals from breeding. C	<250	<2,500	<10,000	Mature individuals capable of breeding: Statewide: 2956 (between 1596 – 5300) Eastern subpopulation: 2940 (1584-5280) North-western subpopulation: 16 (12-20)
Continuing decline of at least (up to a maximum of 100 years in future): C1	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)	It is projected that there will be continuing decline of at least 10% over the next three generations

Appendix 1

Summary of Conservation Status Assessment category and criteria

IUCN CATEGORY AND CRITERIA

Vulnerable: A2bd; A4bcde; C1

VICTORIAN LISTING CRITERIA

Primary Criterion 5.1
Sub-criteria 5.1.1; 5.1.3(a)

YEAR ASSESSED

2024

PREVIOUSLY PUBLISHED ASSESSMENTS

2021 – Vulnerable
B2ab(i,ii,iii,iv,v); C1; D1

Summary of geographic distribution

Extent of Occurrence (EOO): (min and max) 168,745 - 186,160 km^2

Area of Occupancy (AOO): (min and max) 3,384 - 3,424 km^2

Continuing decline: is projected for extent of occurrence; area of occupancy; and area, extent, and/or quality of habitat.

Severe fragmentation: No

Extreme fluctuations in extent of occurrence, area of occupancy, number of locations or subpopulations: No

Data for geographic range assessment:

Species observations from the Victorian Biodiversity Atlas and FeralScan were used to calculate extent and area of occurrence. An expert review of the spread of these records was also incorporated.

Dingoes currently occur in two areas of Victoria: the semi-arid mallee habitats in north-western Victoria and the extensive forest, alpine and coastal habitats in eastern Victoria.

These two areas are geographically isolated and ecologically distinct. For these reasons, the assessment collated information on two dingo subpopulations:

- a small and isolated north-western subpopulation, and
- a larger and broadly distributed eastern subpopulation. There is currently no available evidence to suggest that there is more than one subpopulation in eastern Victoria.

Summary of population parameters

Population size: Estimated number of mature individuals capable of breeding:

- Statewide: 2956 individuals (between 1596-5300)

- Eastern subpopulation: 2940 individuals (between 1584-5280)
- North-western subpopulation: 16 individuals (between 12-20)

Generation length: 5 to 5.5 years

Population reduction: at least 30% over the last 15-16.5 years (three generations)

Projected continuing decline: at least 10% over 15-16.5 years (three generations)

Continuing decline: is projected for number of locations or subpopulations; and number of mature individuals.

Data for population size estimates:

Multiple methods were combined to estimate population size for the eastern and north-western subpopulations:

- Density estimates from camera trap sampling (statewide data) (ARI 2024a);
- Effective population size from whole genome analysis (statewide data);
- Count of mature-sized individuals from camera trap mark-recapture analysis (north-west data only);
- Number of any aged animals known to be alive from genetic analysis of scats (north-west data only)

Capability of breeding is important to account for in estimating population size. Not all mature-sized individual dingoes are likely to breed because some mature-sized animals are socially excluded from breeding.

Eastern subpopulation size estimate

Experts considered that the density estimates from camera traps provided the most reliable estimate of the number of mature-sized individuals. The number of mature-sized individuals in eastern Victoria, uncorrected for 'capability of breeding' is likely to be 4,900 (2,640-8,880).

For eastern Victoria, 60% of mature-sized individuals were estimated to be capable of breeding.

Therefore, the number of mature individuals capable of breeding in eastern Victoria is estimated to be 2940 (1584-5280).

North-western subpopulation size estimate

Experts considered that the population size in north-western Victoria was likely closer to the lower end of the density estimate (40). This was above the minimum number known to be alive (29). The number of mature-sized individuals in the north-western subpopulation, uncorrected for 'capability of breeding' is likely to be 30-50.

For north-western Victoria, only 40% of mature-sized individuals were estimated to be capable of breeding. This is lower than for eastern Victoria because the high level of relatedness and inbreeding likely reduce breeding success by additional individuals.

Therefore, the number of mature individuals capable of breeding in north-western Victoria is estimated to be 16 (12-20).

Generation length:

Generation length was calculated using the formula provided in the IUCN Red List Assessment Guidelines (IUCN Standards and Petitions Committee 2024) based on the following information:

- Older dingoes are more fertile (greater fecundity) due to their social system
- The age of first reproduction is 24-36 months
- Longevity is 7-10 years
- Length of the reproductive period is 5 or 6 years

Data for population reduction estimates:

Because of its size, the eastern subpopulation represents over 99% of the Victorian population. This means that population changes in eastern Victoria have a disproportionate influence on population reductions calculated at the statewide scale. There is also more data available to estimate population reductions in eastern Victoria, with captures-per-traps-set data available for a longer time period than in north-western Victoria.

Multiple data sources helped to quantify population reduction:

1. Trapping data from the Victorian Wild Dog Management Program (ARI, 2024b). A 70% reduction in captures-per-traps-set (capture success) was recorded in eastern Victoria from 2011-2023. Experts agreed that at least

half the reduction in capture success was likely due to a reduction in population size. Reduced effectiveness of trapping over time (as dingoes learn to avoid traps) likely contributed to the rest of the decline in capture success.

2. Genetic analyses. Changes in 'effective population size' (a measure of genetic diversity that gives insights into population size), with a decline of 25-40% over the last eight generations. A marked increase in the pace of effective population decline occurred 30-40 years ago. Projecting the decline forward to look at the time window required for the assessment, the effective population size has likely declined 20-30% in the eastern subpopulation, and 25-34% in the north-western subpopulation, over the last three generations. The effective population size is projected to continue to decline into the future. This rate of decline is unlikely to occur in a stable population.

IUCN population size reduction criteria

Past population reduction (criterion A2): Population reduction over the last three generations (15-16.5 years) is estimated to be at least 30%, with at least half of the 70% reduction in captures-per-traps-set in eastern Victoria (2011-2023) considered plausible to attribute to reduction in population size.

Past and future population reduction (criterion A4): Population reduction is expected to continue at the current, or increasing rate, due to ongoing threats, and is therefore estimated to be at least 30% over a three-generation window (15-16.5 years) that spans both the past and the near future (2011 to 2025-2027).

Credits

This report summarises the extinction risk of the dingo in Victoria by applying the global best practice IUCN assessment methodology. More information on IUCN listing criteria can be found here: IUCN Red List Criteria.

The Department of Energy, Environment and Climate Action would like to thank and acknowledge the many subject matter experts who provided significant contributions to this assessment. This report is based on data, information and advice obtained during expert workshops with dingo researchers, members of the Victorian Scientific Advisory Committee, as well as advice from experts in applying the IUCN Red List assessment process.

References

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Acknowledgement

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

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