NOMINATION NO. **887**
TAXON ID: 10225

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE

FINAL RECOMMENDATION ON A NOMINATION FOR LISTING

Hieraaetus morphnoides Gould 1841 - Little Eagle

File No.: FF/54/3808
DOCID107-417469679-742

Date of receipt of nomination: 12 January 2020

Date of preliminary recommendation: 8 July 2020

Date of final recommendation: 7 October 2020

Validity: The nomination is for a valid item.

Prescribed Information: The prescribed information was provided.

Name of the Nominator is adequately provided.

Name of the item is adequately provided.
The nominated taxon is accepted by the Scientific Advisory Committee (SAC) as a valid taxon because it has been formally described and it is accepted as a valid taxon by Museum Victoria.

Current conservation status

The nominated taxon is not currently regarded as rare or threatened in Victoria.
The Little Eagle was listed in:

i) ACT as a Vulnerable species on 25 February 2008 in accordance with the *Nature Conservation Act 1980* (ACT Government 2019).
ii) New South Wales as a Vulnerable species on 12 February 2010 in accordance with the NSW *Threatened Species Conservation Act 1995* (NSW Scientific Committee 2010).
iii) South Australia as a Vulnerable species in 2019 in accordance with the SA *National Parks and Wildlife Act 1972* (Government of South Australia 2019).

Eligibility for listing as a taxon under the Flora and Fauna Guarantee Act 1988

The Scientific Advisory Committee has assessed the eligibility of this nomination based on its extinction risk within Victoria in accordance with Section 16C(4)(c) of the *Flora and Fauna Guarantee Act 1988* (the Act).

This nomination was made to the Committee on 12 January 2020 in accordance with the Act and Flora and Fauna Guarantee Regulations 2011 and was accepted as a nomination by the Committee on 6 February 2020.

Amendments to the Act came into operation on 1 June 2020 and the Flora and Fauna Guarantee Regulations 2011 have since been replaced by the Flora and Guarantee Regulations 2020.

The SAC is therefore required to consider this nomination in accordance with the Act as amended and the criteria for determining eligibility for listing as prescribed in the Flora and Fauna Guarantee Regulations 2020. In its application of the relevant eligibility criteria, the SAC has, as required by the nationally adopted Common Assessment Method, had regard to the *IUCN Red List Categories and Criteria (Version 3.1)* and the *Guidelines for Using the IUCN Red List Categories and Criteria* (Version 14, 2019).

Species information

Description and Life History
Little Eagles are small, powerful and stocky (45-55 cm) birds of prey with a wingspan of more than 1 m. They have a long tail that is square-cut at the tip when it is closed. Legs are heavily feathered and the feet and talons are powerful. The species' plumage ranges from light to dark brown, with a short crest with a distinctive underwing 'M' in the light morph and a pale, broken 'M' across the upperparts. Debus (2017a,b) provides a more detailed description of this species.

Little Eagles are carnivorous, eating mainly rabbits, birds and reptiles. Little Eagles catch prey on the ground by dropping onto it from a prominent perch or from a glide; only rarely is food caught in flight (Emison et al. 1987). The species is heavily dependent on rabbits (Ratcliffe 1956), especially in non-arid areas (Debus *pers. comm*. December 2019), but following the spread of rabbit calicivirus disease, and consequent decline in rabbit numbers by 65-85% in the arid and semi-arid zones, the Little Eagle is likely to be increasingly dependent on native prey in the inland. Most of its former native mammalian prey species in inland Victoria are extinct (terrestrial mammals of rabbit size or smaller, e.g. large rodents, bandicoots, bettongs, and small wallabies; NSW Scientific Committee 2015). In temperate areas Little Eagles prey heavily on rabbits (Debus 2017b, pp. 70-73), which are subject to poisoning campaigns. Little Eagles are an endemic bird of prey. In Victoria, the species is widespread, where they have been most commonly recorded from wooded farmlands and dry woodlands (Emison et al. 1987). During the *Atlas of Victorian Birds* atlas period (Emison op. cit.), the highest reporting rates for the species were in the Mid and Lower Murray Valley where wetlands and irrigated farmlands adjoin River Red Gum woodlands and forests. Little Eagles are absent from areas of high urbanisation and dense forests, and more abundant in open woodland (Marchant & Higgins 1993). Adult breeding Little Eagles are resident in permanent home ranges for at least several consecutive years Debus (2017b, p. 69) and juveniles and individuals are dispersive, travelling up to 2900 km (Debus op. cit.; Rae et al. 2019). Adults breeding in south-eastern Australia (e.g. ACT) migrate to winter in the tropics 3000 km away. (Brawata et al. 2018; Rae et al. 2019).
Little Eagles utilise Yellow Box-Red Gum grassy woodland which is a component of the EPBC Act-listed ecological community: *White Box-Yellow Box-Red Gum Grassy Woodland and Derived Native Grassland*. Habitat for the Little Eagle in the South Eastern Highlands bioregion is under ecological stress generally and regional population decline of the species is evident (ACT Government 2013).

Distribution

Little Eagles are an endemic to Australia and have not been recorded from Tasmania. In Victoria, the species is widespread, where they have been most commonly recorded from wooded farmlands and dry woodlands (Emison et al. 1987). They have also been reported from many other habitats but usually not in large areas of wet forest (eg. Great Divide E of Melbourne), the mallee 'deserts' (Big Desert and Sunset Country-Wyperfeld) or treeless farmland. During the *Atlas of Victorian Birds* atlas period (Emison op. cit.), the highest reporting rates for the species were in the Mid and Lower Murray Valley where wetlands and irrigated farmlands adjoin River Red Gum woodlands and forests. Little Eagles are absent from areas of high urbanisation and dense forests, and more abundant in open woodland (Marchant & Higgins 1993).

Habitat

Adult breeding Little Eagles are resident in permanent home ranges for at least several consecutive years Debus (2017b, p. 69) and juveniles and individuals are dispersive, travelling up to 2900 km (Debus op. cit.; Rae et al. 2019). Adults breeding in south-eastern Australia (e.g. ACT) migrate to winter in the tropics 3000 km away (Brawata et al. 2018; Rae et al. 2019).
Little Eagles utilise Yellow Box-Red Gum grassy woodland which is a component of the EPBC Act-listed ecological community: White Box-Yellow Box-Red Gum Grassy Woodland and Derived Native Grassland. Habitat for the Little Eagle in the South Eastern Highlands bioregion is under ecological stress generally and regional population decline of the species is evident (ACT Government 2013).

Threats

Larkin et al. (2020) and Debus (2017b) identified the main threats to Little Eagles as:

- loss of and disturbance to, breeding habitat and nests sites by urbanisation and high density rural subdivision leading to competition with Wedge-tailed Eagles for remaining habitat
- secondary poisoning from use of pindone to control rabbits.

Additional threats are:

- collisions with vehicles, fences (especially barbed wire) and powerlines
- shooting (persecution related to predation on free-range or insufficiently protected poultry)
- accidental trapping

The main threats to the Little Eagle are inferred to be clearing and degradation of its foraging and breeding habitat. In this regard Bradshaw (2012) identified the loss of Victorian forests as follows:

> 'According to the Victorian Government, ~66% of the state's native vegetation has been cleared since European colonization (DSE 2011), leaving 34% of the state's land area covered by native forests. According to Lindenmayer (2007), this makes Victoria the most heavily cleared state in the country.'

Direct human threats to habitat are most evident around expanding provincial cities, where urbanisation and rural-residential expansion are displacing breeding pairs (e.g. Canberra). Loss of breeding sites may bring the Little Eagle into increasing interspecific competition with the larger, dominant Wedge-tailed Eagle *Aquila audax* (Olsen et al. 2008)(see below). Secondary poisoning from pindone used to control rabbits is listed as a possible threat.

Loss of habitat
Grasslands and woodlands on the Melbourne urban fringe are continuing to disappear due to urban development (Williams et al. 2005). In 2009, the Department of Sustainability & Environment reported on the impact of proposed changes in the urban boundary and stated that '…it is recognised that the proposed Program would have a significant impact on those parts of the *Natural Temperate Grassland and Grassy Eucalypt Woodland* ecological communities within the expanded Urban Growth Boundary, as well as along the proposed alignments of the OMR/E6 Transport Corridor and Regional Rail Link. Within the area affected by…proposed urban and infrastructure development, the impacts on the remnant ecological communities and local populations of some listed species would be significant in a local context and irreversible.' (DSE 2009)

The impact of urbanisation on Little Eagle habitat has been already recognised in the ACT where Olsen & Fuentes (2005) noted that:

> 'Suburban development in remaining Little Eagle breeding habitat as proposed by the ACT Government would be extremely detrimental to the species' survival in the area.'

Competition with Wedge-tailed Eagles
There is some evidence that competition with the larger Wedge-tailed Eagle may have had a negative impact of Little Eagles. viz. Fuentes (2005) studying the species in the ACT noted that:

> 'The Little Eagles abandoned territories that they had during the late 80s and early 90s, and Wedge-tailed Eagles appeared in these areas. Though it is likely that Wedge-tails excluded Little Eagles from this areas, our data is not conclusive.'

However more recent dietary work on the species in the ACT (Olsen et al. 2010) found that:

> 'In addition to European rabbits (*Oryctolagus cuniculus*), Little Eagles specialized on birds, but tended to avoid macropods, a main prey of Wedge-tailed Eagles, and there was little overlap in prey used by the two eagle species.'

and

> 'We suggest that direct competition for prey probably was not the cause of the Little Eagle decline.'

Anticoagulant rodenticides
Pindone has been suggested as the cause of the decline of Little Eagles near Canberra (Olsen et al. 2013). As well as the possibility of mortality, sub-lethal doses may impact on the wellbeing of Little Eagles and affect their survival and breeding success. These workers noted that:

> '…, the chemicals Pindone (2-pivalyl, 3-indandione) and 1080 (sodium fluoroacetate) are used to poison rabbits, and Pindone may disable raptors and/or be fatal to them.'

Although, as concluded by Fisher (2013),

> 'There is a significant lack of toxicological and field-evidence data available for pindone….. Perceptions that pindone always has lower non-target risk than 1080 need to be assessed by addressing the identified information gaps for pindone.'

It is difficult to evaluate the level of threat posed by Pindone used to poison rabbits. Based on toxicity studies with Wedge-tailed Eagles, it seems likely that some rabbit carcasses contain sufficient toxin to kill a Little Eagle. However Little Eagles take mainly juvenile rabbits (as live prey) and for effectiveness, rabbit control is preferably timed to avoid the season when juveniles are present (ACT Government 2013). Pindone is freely available and understood to be used by many landholders through the range of the Little Eagle (ACT Government op cit.).

Decision by the Scientific Advisory Committee

The eligibility of the nominated taxon (including the extinction risk and the category of threat that applies to the taxon) to be specified in the Threatened List must be determined in accordance with the eligibility criteria prescribed for the purposes of Division 2 of Part 3 of the *Flora and Fauna Guarantee Act 1988*.

The relevant eligibility criteria are prescribed in Schedule 1 of the Flora and Fauna Guarantee Regulations 2020, which provides that a taxon is at risk of extinction in a particular category of threat and is therefore eligible to be specified in the Threatened List in relation to that category if a primary criterion for that category is met. Where applicable, a primary criterion is met if any one of its subcriteria is satisfied.

Primary criterion 5.1

> *The taxon of flora or fauna is vulnerable.*
> ***Vulnerable***, in relation to a taxon of flora or fauna, means that the taxon is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future.

The taxon is assessed as being eligible for listing as Vulnerable under Criterion 5.1 – subcriteria 5.1.1.

The taxon was assessed as not eligible under Criteria 5.1.2, 5.1.3, 5.1.4, 5.1.5 and 5.1.6.

Subcriterion 5.1.1 *The taxon has undergone, is suspected to have undergone or is likely to undergo in the immediate future a substantial reduction in population size*

(5.1.1 is equivalent to IUCN Criterion A)

Evidence:
Recent declines of Little Eagle have been seen across Australia - there are few records in the Victorian Biodiversity Atlas (VBA) in the last decade, and the species may be not breeding in some areas. In the first national bird atlas in 1977–81 (Blakers et al. 1984), the Little Eagle was reported in 65% of one degree grid cells across Australia, with mostly high reporting rates (more than 40% of surveys per grid) across NSW and Victoria. During the second national bird atlas in 1998–2002, the Little Eagle was recorded in 59% of grid cells, at mostly low reporting rates (recorded in less than 20% of surveys per grid). In continental Australia, the species atlas reporting rate for Little Eagles declined by 14% overall, while in NSW a decline of 70% has been recorded over a 20 year time interval (Debus 2017b, p. 68). The species is listed under South Australian, New South Wales and ACT legislation and Debus (2017b, p. 69) notes that under IUCN listing criteria a >50% decline in index of abundance in three generations suggests the Little Eagle qualifies for Endangered in these jurisdictions. Debus (op. cit.) notes that, since the 1980s in northern NSW, estimated adult mortality of the species has doubled to 10% and life expectancy has halved (to 9.5 years) while estimated life expectancy for the species in the eastern sheep belt is approximately 5 years. Trends in the SE sheep-wheat belt, and in NSW specifically, both for Atlas reporting rates and for breeding productivity and recruitment, are a considered by most raptor biologists to be a reasonable indication of what is likely to be happening in Victoria. For example Silcocks (*pers. comm*. 2019) advises that ' …it appears that the Little Eagle has declined over the course of the Atlas period.' In addition, the species has been identified as 'Vulnerable' in South Australia and suspected of experiencing '…a continuing decline and a single subpopulation' (South Australian Government 2019). As the Little Eagle is a resident, territorial species that is long-lived with low breeding productivity, and formerly had a low and stable density, its recent anticipated decline in Victoria may be a long-term process that tracks habitat quality and overall prey biomass rather than a temporary fluctuation caused by short-term climatic variation or the calicivirus-induced decline in rabbits (based on NSW Scientific Committee 2015).

The main threats to the Little Eagle are inferred to be clearing and degradation of its foraging and breeding habitat, loss of and disturbance to, breeding habitat and nests sites by urbanisation and high density rural subdivision, increased competition with Wedge-tailed Eagles for remaining habitat and anticoagulant rodenticides.
Direct human threats to habitat are most evident around expanding provincial cities, where urbanisation and rural-residential expansion are displacing breeding pairs. For example, David Whelan (pers. obs.) notes the following 'Little Eagles are under an increasing threat of urbanization in the Bacchus Marsh area which appears to be an area of high productivity for the species, particularly given the western growth corridor expansion of Melbourne. They thrive in this district in open woodland dominated by Yellow Gum/Yellow Box and to a lesser extent Grey Box and the junction where that meets agricultural land.' The loss of habitat and especially breeding sites may bring the Little Eagle into increasing interspecific competition with the larger, dominant Wedge-tailed Eagle Aquila audax (Olsen et al. 2008)(see below).
There is some evidence that competition with the larger Wedge-tailed Eagle may have had a negative impact of Little Eagles. viz. Fuentes (2005) studying the species in the ACT noted that: 'The Little Eagles abandoned territories that they had during the late 80s and early 90s, and Wedge-tailed Eagles appeared in these areas. Though it is likely that Wedge-tails excluded Little Eagles from these areas, our data is not conclusive.'
Secondary poisoning from anticoagulants including Pindone (2-pivalyl, 3-indandione) and 1080 (sodium fluoroacetate) used to control rabbits may disable raptors and/or be fatal to them. Pindone has been suggested as the cause of the decline of Little Eagles near Canberra (Olsen et al. 2013). As well as the possibility of mortality, sub-lethal doses may impact on the wellbeing of Little Eagles and affect their survival and breeding success.

Additional threats to the species are:

- collisions with vehicles, fences (especially barbed wire) and powerlines
- shooting (persecution related to predation on free-range or insufficiently protected poultry)
- accidental trapping

Documentation

The published information provided to the SAC has been assessed. Based on the available evidence, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

Advertisement for public comment

In accordance with the requirements of Section 16D of the *Flora and Fauna Guarantee Act 1988*, the preliminary recommendation (PRR) was advertised for a period of at least 30 days.
The preliminary recommendation was advertised in:

Herald Sun [Public Notices] on 19 August 2020
Weekly Times [Public Notices] on 19 August 2020
Victorian Government Gazette on 20 August 2020
DELWP website

Public submissions closed on 21 Sept 2020.

Additional Information considered by the Scientific Advisory Committee

Following publication of the PRR, the SAC received three submissions, all of which supported the recommendation. The SAC is not aware of any compelling evidence to warrant a change to the preliminary recommendation that the nominated taxon is eligible for listing.

Final Recommendation of the Scientific Advisory Committee

Proposed conservation status (category of threat): List as 'Vulnerable' in Victoria
As outlined above, the nominated taxon satisfies at least one criterion of the set of criteria prepared and maintained under Division 2 of Part 3 of the Act and stated in Schedule 1 of the Flora and Fauna Guarantee Regulations 2020.

The Scientific Advisory Committee concludes that on the evidence available the nominated item is eligible for listing as Vulnerable in Victoria because Primary criterion 5.1 – subcriteria 5.1.1 of the FFG Regulations 2020 has been satisfied.

The Scientific Advisory Committee therefore makes a final recommendation that the nominated taxon be supported for listing as Vulnerable under the *Flora and Fauna Guarantee Act 1988.*

Endorsement by the Convenor of the Scientific Advisory Committee **Date**

Dr. Michelle Casanova **30 November 2020**
Convenor

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