

## Notice of and reasons for the Final Determination

The NSW Threatened Species Scientific Committee, established under the *Biodiversity Conservation Act 2016* (the Act), has made a Final Determination to reject a proposal to list the bird, Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 as an Endangered species in Part 2 of Schedule 1 of the Act and to retain the listing of Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 as a Vulnerable species in Part 3 of Schedule 1 of the Act. A Conservation Assessment report and Preliminary Determination for Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 as an Endangered species was published from 21 January 2022 to 21 April 2022. Following consideration of advice and submissions received, Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 is to remain listed as a Vulnerable species. Listing of a Vulnerable species is provided for by Part 4 of the Act.

### Summary of Conservation Assessment

The Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 was found to be Vulnerable in accordance with the following provisions in the *Biodiversity Conservation Regulation 2017*: Clause 4.5 (c), because the total number of mature individuals is low.

The NSW Threatened Species Scientific Committee has found that:

1. The Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877, is a subspecies (endemic to Lord Howe Island) of the Pied Currawong *Strepera graculina*. There are an additional five recognised subspecies of Pied Currawong that occur on mainland Australia. SPRAT (2021) describes the Lord Howe Pied Currawong as “a large bird about 46 cm in length (Hutton 1991). It is mostly glossy black, but has bright orange irides, a small patch of white on each wing (at the base of the primary feathers), a large patch of white around the undertail coverts, a small patch of white at the base of the tail, and a white tip on its tail (Higgins *et al.* 2006; Hutton 1991). The sexes look alike, but females are slightly smaller than males (Higgins *et al.* 2006; Schodde and Mason 1999). Juvenile and immature birds are similar to the adults, but they have a duller and (especially in juveniles) browner plumage, and juvenile birds also exhibit pale markings on the head, neck, upper body, breast and wings, and have a yellow gape and, for the first eight months, a yellow tip on the bill (Nicholas Carlile pers. comm. February 2024, Higgins *et al.* 2006).”
2. Lord Howe Pied Currawong is restricted to Lord Howe Island (and nearby islets), to which it is endemic (Carlile *et al.* 2021; SPRAT 2021). Lord Howe Island (1455 ha, 31.54°S, 159.08°E), is located in the Tasman Sea, 585 km east of Port Macquarie (NSW) and 1,550 km north-west of Auckland (New Zealand) (Segal *et al.* 2021). The island is an eroded volcanic remnant, 3 km wide by 11 km long, reaching a maximum height of 875 m (McDougall *et al.* 1981). The island is UNESCO world heritage listed and is predominantly covered by native vegetation, with 75% of the island reserved for conservation (DECC 2007). Lord

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Howe Pied Currawongs occur across the island, with aggregations of birds occurring at lower elevations in autumn and winter (Hutton 1991). This subspecies prefers to nest close to low elevation gullies in forested areas (Segal *et al.* 2021).

3. The population of Lord Howe Pied Currawong was stable up to 2020, at around 235 mature individuals (Carlile *et al.* 2021, O'Dwyer *et al.* 2024), all in one subpopulation. A high proportion (60%) of the islands' Currawongs were banded with colour bands (Carlile *et al.* 2021, O'Dwyer *et al.* 2024, Segal *et al.* 2021), which allowed detailed estimates of abundance to be made. In 2006, the population was estimated using mark–recapture methods using 169 banded birds to be  $215 \pm 11$  birds, of which 42 were juveniles (Carlile and Priddel 2007). The extent of the island and topography impose a limitation on the number of breeding territories. The number of modelled territories was estimated as 84, based on nests located in 2017 and 2018 (Segal *et al.* 2021), prior to the 2019 rodent eradication program.
4. A minimum of 255 Lord Howe Pied Currawong, including adults and juveniles, were trapped and banded over the duration of the rodent eradication program that was undertaken across Lord Howe Island in 2019 (O'Dwyer *et al.* 2024). Over 200 individuals were captured and banded in 2019, with a subset (129 individuals) held as a captive insurance population during the eradication program and subsequently released (O'Dwyer *et al.* 2024). Trapping and banding of Currawongs continued throughout the eradication (leaving very few unbanded individuals), resulting in the identification of an additional 126 free-living adults and juveniles, providing a total minimum overall population prior to the eradication of 255 individuals (O'Dwyer *et al.* 2024). Survival of the >70 wild individuals during the eradication program was 65-85%, with at least six confirmed or suspected to have died due to brodifacoum toxicity (Carlile *et al.* 2021, O'Dwyer *et al.* 2024).
5. Despite the absence of ongoing population monitoring, evidence indicates that the Lord Howe Pied Currawong population has increased to greater than 250 mature individuals since the rodent eradication program undertaken in 2019. Mark-recapture surveys and additional surveys of breeding territories soon after the eradication (September–November 2020) suggest that the population was 213 (+/-15) mature individuals, a slight decrease on pre-rodent eradication program numbers (235 +/- 11) (O'Dwyer *et al.* 2024). However, plot surveys performed a further 12 months later in 2021 indicated that Lord Howe Pied Currawong numbers had subsequently increased, based on an increased frequency of occurrence in observational plots across the island (O'Dwyer *et al.* 2024). The frequency of sightings of the Lord Howe Pied Currawong in plots increased from 0.45 pre-rodent eradication to 0.63 by late 2021 (T. O'Dwyer *in litt* April 2022). When compared to the 2019 population estimate of 235 mature individuals (O'Dwyer *et al.* 2024) this would equate to a population estimate of 329 mature individuals ( $235 \times 1.4$ ) in 2021. This is further supported by observational and anecdotal evidence. Banding ceased in 2020 and the proportion of banded adults in the population has subsequently declined, with large groups of unbanded adult and juvenile birds observed in 2023 (Nicholas

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Carlile pers. comm. February 2024). The last banding event in September and October 2020 resulted in 44 juveniles being banded, more than any of the three years (2016–2018) prior to the rodent eradication, indicating that the Currawongs were productive in the year following eradication (O'Dwyer *et al.* 2024). Larger flocks of Lord Howe Pied Currawongs have been observed across the island since the rodent eradication, including in areas where few birds previously occurred. This includes a group of 22 birds at Boat Harbour in May 2023—an area where only one pair of adults and up to three juveniles had been observed in the decade prior (Leon Brice pers. comm. February 2024). The work by Segal *et al.* (2021) identifies that there are limits in terms of nesting habitat across the island that will cap the total population, and this limit is less than 1,000 mature individuals.

6. Carlile *et al.* (2021) provide a maximum, minimum and best estimate of extent of occurrence (EOO) and area of occupancy (AOO) as well as an indication of reliability. The EOO of the Lord Howe Pied Currawong was estimated to be 26 (24-27) km<sup>2</sup> with a high reliability. The EOO is based on a minimum convex polygon enclosing all known mapped occurrences of the subspecies, the method of assessment recommended by IUCN (2022). Area of occupancy was estimated to be 16 (12-17) km<sup>2</sup> with a high reliability, based on the species' occupying four 2 km x 2 km grid cells, the spatial scale of assessment recommended by IUCN (2022). Both AOO and EOO are stable (Carlile *et al.* 2021).
7. The Lord Howe Pied Currawong occurs in all habitat types of Lord Howe Island, although nesting is confined to forested areas, typically tall rainforests and palm forests, near creeklines below ~120 m above sea level (SPRAT 2021; Segal *et al.* 2021). The nest is cup-shaped and constructed from sticks and twigs, with the occasional inclusion of vines, and is found from 3 m to 25 m off the ground under a high canopy and within an open vegetation structure of palms (*Howea* spp.) and *Pandanus forsteri* (Forky Tree) (SPRAT 2021; Segal *et al.* 2021). Nest trees reported by Segal *et al.* (2021) included *Cryptocarya triplinervis* (Blackbutt), *Drypetes deplanchei* (Greybark), *Syzygium fullagarii* (Scalybark), *Olea paniculata* (Maulwood) and *Ficus macrophylla columnaris* (Banyan). Nesting occurs in various vegetation communities including Greybark and Blackbutt rainforest, and Scalybark, Curly Palm (*Howea belmoreana*), Greybark, Cedar (*Guioa coriacea*), Maulwood and Forky Tree lowland mixed forest (Segal *et al.* 2021). Two to three eggs, which are light brown to rufous-brown in colour, with darker spots and blotches of brown and grey are laid in the nest and nestlings are fed by both parents (Hindwood 1940; Hutton 1991; Carlile *et al.* 2021). Incubation period is 21 days and the young stay with the parents for about two months after fledging (SPRAT 2021; Segal *et al.* 2021). Generation length is estimated as 6.3 (range: 4.7–7.9) years (Bird *et al.* 2020; Carlile *et al.* 2021). Life expectancy and the age of maturity are unknown, however, the species is likely capable of living to more than 20 years of age (Higgins *et al.* 2006; SPRAT 2021). Breeding has been recorded from October to December (Hindwood 1940; McAllan *et al.* 2004; McFarland 1994; Mills undated; SPRAT 2021) but possibly commences in September (McAllan *et al.* 2004) or even as early as July (Hull 1909).
8. The Lord Howe Pied Currawong is omnivorous and eats a variety of food items including fruits and seeds, insects and other invertebrates, small vertebrates,

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domestic poultry and the chicks of land and sea birds (Auld *et al* 2010; Carlile and Priddel 2015; SPRAT 2021). Invertebrates comprise 65% of diet, and vertebrates 21%, with the introduced skink *Lampropholis delicata* the most common vertebrate prey item (Carlile and Priddel 2007; Carlile *et al.* 2021). This species is sedentary and breeding pairs defend a territory year-round, with occasional excursions outside of forested habitats to forage in areas across the island, such as orchards, seabird colonies and at bird feeders (Higgins *et al.* 2006; Segal *et al.* 2021). Average territory size ranges between 2.48 ha and 5.23 ha (Segal *et al.* 2021).

9. Carlile *et al.* (2021) identified there are no plausible existential threats but noted the restricted area of occupancy makes the subspecies susceptible to catastrophes, such as the introduction of another predator or disease. Such a catastrophe could adversely affect the entire population of Lord Howe Pied Currawong within one generation, meaning that the species has only one threat-defined location. However, the risk of these catastrophes was assessed by Carlile *et al.* (2021) as low, owing to quarantine procedures that minimise the probability of alien invasions. Until the 1980s, residents of Lord Howe Island persecuted Currawongs for attacking poultry, White Terns and Woodhens, but this is now a rare occurrence (Carlile and Priddel 2015; McAllan and Hutton 2020). Introduced species including Black Rats *Rattus rattus* (introduced in 1918), and Masked Owls *Tyto novaehollandiae* (introduced in the 1920s) (Hindwood 1940; McAllan *et al.* 2004), had little to no impact on this taxon and have now been eradicated or are being actively managed (Carlile *et al.* 2021).
10. The Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 is not eligible to be listed as a Critically Endangered or Endangered species.
11. The Lord Howe Pied Currawong *Strepera graculina crissalis* Sharpe, 1877 is eligible to be listed as a Vulnerable species as, in the opinion of the NSW Threatened Species Scientific Committee, it is facing a high risk of extinction in Australia in the medium-term future as determined in accordance with the following criteria as prescribed by the *Biodiversity Conservation Regulation 2017*:

### **Assessment against *Biodiversity Conservation Regulation 2017* criteria**

#### **Overall Assessment Outcome:**

The clauses used are listed below for reference.

#### **Overall Assessment Outcome: Vulnerable under Clause 4.5 (c).**

#### **Clause 4.2 – Reduction in population size of species**

##### **(Equivalent to IUCN criterion A)**

##### **Assessment Outcome: Not met**

**(1) - The species has undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon:**

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	(a)	for critically endangered species	a very large reduction in population size, or
	(b)	for endangered species	a large reduction in population size, or
	(c)	for vulnerable species	a moderate reduction in population size.
<b>(2) - The determination of that criteria is to be based on any of the following:</b>			
	(a)	direct observation,	
	(b)	an index of abundance appropriate to the taxon,	
	(c)	a decline in the geographic distribution or habitat quality,	
	(d)	the actual or potential levels of exploitation of the species,	
	(e)	the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.	

**Clause 4.3 - Restricted geographic distribution of species and other conditions  
(Equivalent to IUCN criterion B)  
Assessment Outcome: Not met**

<b>The geographic distribution of the species is:</b>			
	(a)	for critically endangered species	very highly restricted, or
	(b)	for endangered species	highly restricted, or
	(c)	for vulnerable species	moderately restricted,
<b>and at least 2 of the following 3 conditions apply:</b>			
	(d)	the population or habitat of the species is severely fragmented or nearly all the mature individuals of the species occur within a small number of locations,	
	(e)	there is a projected or continuing decline in any of the following:	
		(i)	an index of abundance appropriate to the taxon,
		(ii)	the geographic distribution of the species,
		(iii)	habitat area, extent or quality,
		(iv)	the number of locations in which the species occurs or of populations of the species,
	(f)	extreme fluctuations occur in any of the following:	
		(i)	an index of abundance appropriate to the taxon,
		(ii)	the geographic distribution of the species,
		(iii)	the number of locations in which the species occur or of populations of the species.

**Clause 4.4 - Low numbers of mature individuals of species and other conditions  
(Equivalent to IUCN criterion C)  
Assessment Outcome: Not met**

<b>The estimated total number of mature individuals of the species is:</b>			
	(a)	for critically endangered species	very low, or

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	(b)	for endangered species	low, or
	(c)	for vulnerable species	moderately low,
<b>and either of the following 2 conditions apply:</b>			
	(d)	a continuing decline in the number of mature individuals that is (according to an index of abundance appropriate to the species):	
	(i)	for critically endangered species	very large, or
	(ii)	for endangered species	large, or
	(iii)	for vulnerable species	moderate,
	(e)	both of the following apply:	
	(i)	a continuing decline in the number of mature individuals (according to an index of abundance appropriate to the species), and	
	(ii)	at least one of the following applies:	
		(A)	the number of individuals in each population of the species is:
		(I)	for critically endangered species extremely low, or
		(II)	for endangered species very low, or
		(III)	for vulnerable species low,
		(B)	all or nearly all mature individuals of the species occur within one population,
		(C)	extreme fluctuations occur in an index of abundance appropriate to the species.

### Clause 4.5 - Low total numbers of mature individuals of species

(Equivalent to IUCN criterion D)

**Assessment Outcome: Vulnerable under Clause 4.5 (c)**

<b>The total number of mature individuals of the species is:</b>			
	(a)	for critically endangered species	extremely low, or
	(b)	for endangered species	very low, or
	(c)	for vulnerable species	low.

### Clause 4.6 - Quantitative analysis of extinction probability

(Equivalent to IUCN criterion E)

**Assessment Outcome: Data deficient**

<b>The probability of extinction of the species is estimated to be:</b>			
	(a)	for critically endangered species	extremely high, or
	(b)	for endangered species	very high, or
	(c)	for vulnerable species	high.

### Clause 4.7 - Very highly restricted geographic distribution of species—vulnerable species

(Equivalent to IUCN criterion D2)

**Assessment Outcome: Not met**

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For vulnerable species,	the geographic distribution of the species or the number of locations of the species is very highly restricted such that the species is prone to the effects of human activities or stochastic events within a very short time period.
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Professor Kristine French  
Chairperson  
NSW Threatened Species Scientific Committee

## Supporting Documentation:

Hope B, Dawson J (2024) Conservation Assessment of Lord Howe pied currawong *Strepera graculina crissalis* Sharpe (1877) (Artamidae). NSW Threatened Species Scientific Committee.

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