

Publication date: 9 August 2024

## 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 list the Asian dowitcher *Limnodromus semipalmatus* (Blyth, 1848) as a VULNERABLE SPECIES in Part 3 of Schedule 1 of the Act. Listing of Vulnerable species is provided for by Part 4 of the Act.

The NSW Threatened Species Scientific Committee is satisfied that the Asian dowitcher *Limnodromus semipalmatus* (Blyth, 1848) has been duly assessed by the Commonwealth Threatened Species Scientific Committee under the Common Assessment Method, as provided by Section 4.14 of the Act. After due consideration of Commonwealth DCCEEW (2024), the NSW Threatened Species Scientific Committee has made a decision to list the species as Vulnerable.

## Summary of Conservation Assessment

The Asian dowitcher *Limnodromus semipalmatus* (Blyth, 1848) was found to be Vulnerable in accordance with the following provisions in the *Biodiversity Conservation Regulation 2017*: Clause 4.5 (c) because the species has a low total number of mature individuals, with 600-800 birds estimated to occur in Australia.

The NSW Threatened Species Scientific Committee has found that:

1. The Asian dowitcher *Limnodromus semipalmatus* (Blyth, 1848) (family Scolopacidae) is 33–36 cm long, has a wingspan of approximately 59 cm, and weighs approximately 180–190 g. They are a large, distinctive shorebird with a long neck, long legs, and a long, straight, snipe-like bill. Females are slightly larger and longer-billed than males. They also have duller breeding plumage with more white flecking on chest and underparts. The species shows marked seasonal variation in plumage, and juveniles are distinct from adults. Adults in breeding plumage appear to be heavily streaked black and chestnut. The crown of non-breeding adults is white, heavily streaked black, and forms a dark cap that continues as a narrow stripe down through the centre of the forehead to the bill. The species has a prominent dark loreal stripe which is broad at the base of the bill but becomes faded behind the eye, and also has a white supercilium. The crown of juveniles is more heavily streaked than on non-breeding adults, and they also have a darker cap which contrasts more with the white supercilium. The bill, legs, and feet are all grey-black.
2. The Asian dowitcher is a migratory species. It has a disjunct breeding range in the steppe regions that extend from Siberia and Mongolia into northeast China. In Australia, it is only a regular visitor to coastal areas between Broome and Port Headland (Rogers *et al.* 2000, 2020; Weller *et al.* 2019) and the Port McArthur tidal wetlands in the Gulf of Carpentaria (Barden *et al.* 2021). Elsewhere, the species' occurrence is sporadic and rare, typically only appearing as single birds at widely dispersed sites along the northern and eastern Australian coastline including sites in NSW (Barden *et al.* 2021).

## NSW Threatened Species Scientific Committee

---

3. The extent of occurrence (EOO) of the Asian dowitcher is estimated to be 4,600,000 km<sup>2</sup> and the area of occupancy (AOO) is estimated to be 320 km<sup>2</sup> (Barden *et al.* 2021). The species' EOO and AOO are both thought to be stable (Barden *et al.* 2021).
4. Of a global population of approximately 14,000, the total number of mature individuals of the Asian dowitcher visiting Australia is estimated to be 600–800. The estimated Australian population in 2020 (700 mature individuals) is based on counts at Roebuck Bay, north Western Australia (of about 400 individuals, with subsequent counts up to 200 individuals; Rogers *et al.* 2000), counts of up to 125 individuals at Port Hedland Saltworks, and counts of 300–400 individuals between Darwin and the Queensland border based on densities of birds at Port McArthur (density of 0.3 individuals/km<sup>2</sup> of suitable habitat; Chatto 2003). The population is thought to be stable, or slightly increasing (Barden *et al.* 2021).
5. The Asian dowitcher feeds on inter-tidal mudflats. They are carnivorous and feed primarily on small fish, insect larvae, and oligochaetes when breeding (del Hoyo *et al.* 1996), and on polychaetes, insect larvae, and molluscs when migrating or overwintering (del Hoyo *et al.* 1996; Weller *et al.* 2019). During the non-breeding season, the bird roosts in sheltered coastal environments such as estuarine and intertidal mudflats, lagoons, creeks and saltworks.
6. Most birds depart the breeding grounds in Siberia, Mongolia, and north-east China between late July to August, however some birds have remained until early September. Small numbers have been recorded migrating through coastal and near-coastal China from August to October. The species arrives in Australia from August (Higgins and Davies 1996). The southeast coast of Sumatra and northern Java are probably the main staging and non-breeding areas for the species. Only a few individuals arrive in Australia, with no known movements within Australia. They have been recorded along the east coast from mid-September, but are rare in eastern Australia (Higgins and Davies 1996). The Asian dowitcher typically leaves north-west Australia by the end of April, taking a central route through Asia during the return to breeding grounds (Higgins and Davies 1996).
7. Asian dowitchers that overwinter in Australia are dependent on multiple areas of habitat throughout the East Asian - Australasian Flyway (EAAF) at different points in time. A reduction in the extent or quality of habitat in one part of the Flyway can have far-reaching consequences for the species, even if its other areas remain in good condition (Dhanjal-Adams *et al.* 2019 in Commonwealth DCCEE 2024; Jackson *et al.* 2019 in Commonwealth DCCEE 2024). Moreover, events affecting the species during one stage of its annual cycle can carry-over to subsequent stages (Murray *et al.* 2014). As such, population changes experienced in Australia may be driven by processes occurring thousands of kilometres away and during different life stages for the species (Murray *et al.* 2014).
8. In Australia, most individuals spend the non-breeding season on remote northern coastal mudflats, which are not affected by major threats. Extensive mangrove dieback and several large cyclone events have been reported at the Port McArthur

# NSW Threatened Species Scientific Committee

---

tidal wetlands (Duke *et al.* 2017), but these events do not seem to have negatively affected the population of Asian dowitchers so far.

9. The main threats outside Australia to the Asian dowitcher include changes to coastal stop-over locations, particularly along the coast of the Yellow Sea. The Yellow Sea is affected by rapid development for aquaculture and industry; invasion by cordgrass (*Spartina alterniflora*); pollution from domestic, industrial and aquaculture discharges, oil, and pesticides; and hunting and incidental drowning in fishing nets and traps. The species' habitat area is also shrinking because of a combination of restricted inflow of sediments from increasingly dammed rivers (Murray *et al.* 2014; Melville *et al.* 2016; Naves *et al.* 2019) and sea level rise (Iwamura *et al.* 2013), with sea walls at many sites preventing the development of suitable habitat. 'Anthropogenic Climate Change' is listed as a key threatening process under the Act.
10. The Asian dowitcher *Limnodromus semipalmatus* (Blyth, 1848) is not eligible to be listed as an Endangered or Critically Endangered species.
11. The Asian dowitcher *Limnodromus semipalmatus* (Blyth, 1848) 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

The Clauses used for assessment 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.

<b>(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:</b>			
	(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.

# NSW Threatened Species Scientific Committee

---

<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 Clause 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
(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.

# NSW Threatened Species Scientific Committee

---

## Clause 4.5 – Low total numbers of mature individuals of species (Equivalent to IUCN criterion D)

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

The total number of mature individuals of the species is:			
	(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.**

The probability of extinction of the species is estimated to be:			
	(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.**

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.
-------------------------	--

Senior Professor Kristine French  
Chairperson  
NSW Threatened Species Scientific Committee

### Supporting Documentation:

Commonwealth DCCEEW (Department of Climate Change, Energy, the Environment and Water) (2024). Conservation advice for *Limnodromus semipalmatus* (Asian dowitcher). Australian Government, Canberra, ACT.

### References:

Barden P, Woodworth B, Rogers D, Carey M, Garnett ST (2021) Asian dowitcher *Limnodromus semipalmatus*. In: Garnett ST & Baker GB (Eds) *The Action Plan for Australian Birds 2020*. pp. 293-296. CSIRO Publishing, Melbourne.

## NSW Threatened Species Scientific Committee

---

- Chatto R (2003) *The distribution and status of shorebirds around the coast and coastal wetlands of the Northern Territory*. Parks and Wildlife Commission of the Northern Territory, Palmerston.
- del Hoyo J, Elliott A, Christie DA, Sargatal J (1996) *Handbook of the Birds of the World: Hoatzin to Auks*. Lynx Editions, Barcelona.
- Duke NC, Kovacs JM, Griffiths AD, Preece L, Hill DJ, Van Oosterzee P, Mackenzie J, Morning HS, Burrows D (2017) Large-scale dieback of mangroves in Australia's Gulf of Carpentaria: a severe ecosystem response, coincidental with an unusually extreme weather event. *Marine and Freshwater Research* **68**: 1816–1829.
- Higgins PJ, Davies SJJF (Eds) (1996) *Handbook of Australian, New Zealand and Antarctic Birds. Volume 3: Snipe to Pigeons*. Oxford University Press, Melbourne.
- Iwamura T, Possingham HP, Chadès I, Minton C, Murray NJ, Rogers DI, Trembl EA, Fuller RA (2013) Migratory connectivity magnifies the consequences of habitat loss from sea-level rise for shorebird populations. *Proceedings of the Royal Society B: Biological Sciences* **280**: 20130325.
- Melville D, Ma Z, Chen Y (2016) Shorebirds along the Yellow Sea coast of China face an uncertain future – A review of threats. *Emu* **116**: 2.
- Murray NJ, Clemens RS, Phinn SR, Possingham HP, Fuller RA (2014) Tracking the rapid loss of tidal wetlands in the Yellow Sea. *Frontiers in Ecology and the Environment* **12**: 267–272.
- Naves LC, Keating JM, Tibbitts TL, Ruthrauff DR (2019) Shorebird subsistence harvest and indigenous knowledge in Alaska: Informing harvest management and engaging users in shorebird conservation. *The Condor* **121**.
- Rogers DI, Battley PF, Russell M, Boyle A (2000) A high count of Asian dowitchers in Roebuck Bay, North-western Australia. *Stilt* **37**: 11–13.
- Rogers DI, Scroggie MP, Hassell CJ (2020) *Review of long-term shorebird monitoring in north Western Australia*. Arthur Rylah Institute for Environmental Research, Melbourne.
- Weller D, Kidd L, Lee C, Klose S, Jaensch R, Driessen J (2019) *Directory of Important Habitat for Migratory Shorebirds in Australia*. Report to Department of the Environment and Energy, Canberra.