Threatened Species Assessment

Gelochelidon nilotica macrotarsa
Gull-billed Tern

Taxonomy

Gelochelidon nilotica macrotarsa (Gould, 1837)

The taxon was previously called *Sterna nilotica*. This assessment refers to the Australian-breeding subspecies *macrotarsa.* Some checklists (notably the Birdlife International Checklist) now elevate *macrotarsa* to full species status following Rogers et al. (2005), referring to it as the Australian Gull-billed Tern *Gelochelidon macrotarsa*.

This does not cover the migratory subspecies *Gelochelidon nilotica affinis* from Asian breeding grounds, which migrates regularly to non-breeding grounds in northern Australia. There a few records of *affinis* from the Victorian coast, mainly from Westernport.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* as *Sterna nilotica*.

Categorised as Endangered in the 2013 Advisory list of threatened vertebrate fauna in Victoria (DSE 2013).

Proposed conservation status

Endangered in Victoria

Criterion C2a(ii)

For species that also occur outside of Victoria, the *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0 (2012)* apply. This may lead to an adjustment of the threat category, to reflect the influence of adjacent populations.

The regional assessment (Victoria only) could potentially result in CR C2a(ii), given the birds' limited distribution, low population size, and continuing decline, but it has been downgraded to Endangered to account for the influence of interstate populations that reduce the extinction risk in Victoria.

Species Information

Description and Life History

The taxon is a large, gull-like tern with a thick black bill, heavy rounded head and thickset body (Higgins and Davies 1996). Subspecies *macrotarsa* breeds in Australia, usually nesting in colonies on banks or islands in temporary inland lakes. It disperses widely at other times and is often considered nomadic, though with a tendency to move to the coast when the inland dries out, and also with a tendency to migrate northwards in the winter, southwards in summer (Davies et al. 1988). It is most numerous in northern Australia, where it can gather in large flocks on the coast (Rogers et al. 2005). In Victoria, it is seen singly, in pairs or small flocks. The uneven nature of records for the taxon in Victoria supports the notion that Gull-billed Terns are partial summer migrants to Victoria from sites further north (Emison et al. 1987).

Generation Length

The generation length of Gull-billed Terns is inferred to be 11 to 12 years. The IUCN Red List of Threatened Species 2017-3 provided an estimate of 11.7 years, which was based on the European-breeding subspecies *nilotica*. There is no direct information on generation time of subspecies *macrotarsa.*

Gelochelidon nilotica macrotarsa
Gull-billed Tern

Distribution

Gull-billed Terns are found in all continents. The subspecies *macrotarsa* is endemic to Australia but widespread. Within Victoria, Victorian Biodiversity Atlas (VBA) records are clustered around the inland lakes of the Corangamite/Colac region, the Kerang/Swan Hill region, Corner Inlet (where they are regular non-breeding visitors) and western Port Phillip Bay (where they are rarities, but where they are usually detected when present because of the high density of birdwatchers). The major sites in the state where large numbers of Gull-bills have been recorded are certain lakes in the Colac area (Lake Murdeduke, Lough Calvert, Lake Martin, Lake Gellie, Lake Milangil and Ricketts Marsh), Ararat (Lake Goldsmith), and to a lesser extent near Kerang (Lake Tutchewop) and Donald (Lake Buloke).

Up to 1981, Blakers et al. (1984) only had six breeding records of Gull-billed Terns for Australia. This included two records for Victoria (Lake Tutchewop - 1971, and Lake Martin - 1981). The RAOU Nest Record Scheme has only 30 breeding records for the taxon in Australia up to May 1993 (Higgins and Davies 1996). The Wetlands Database and Atlas of Victorian Wildlife have a total of 15 breeding records for Victoria that are post 1970 and 5-minute accuracy or better (as of October 1996). 13 of these records occurred during the period 1979-1989, but the taxon has been recorded breeding only once in Victoria (near Streatham - 1992) since then.

Habitat

Gull-billed Terns inhabit shallow wetlands, both fresh and saline. The birds favour wetlands with mudflats (Emison et al. 1987), including those around inland lakes and coastal tidal flats. In coastal regions, they are the only tern species that routinely forages on tidal flats at low tide, either swooping to pick prey (crabs) from the surface, or stealing prey from shorebirds such as Whimbrels (Rogers et al 2005). At high tide, they roost on beaches and spits, typically in association with roosting flocks of shorebirds, other tern species or gulls. Breeding has been recorded on islands and spits in large lakes where nests are built directly on the ground.

Threats

Native and introduced predators have an impact on the breeding success of Gull-billed Terns in Victoria. At many sites where they have been recorded breeding, Silver Gulls (*Larus novaehollandiae*) also breed simultaneously and are have been reported taking young terns and eggs (Macgillivray and Wheeler in Bourke et al. 1973). Silver Gulls breed at numerous sites across the State and they have been recorded as threats in other water and seabird colonies due to their aggressive behaviour and habit of attacking young birds not their own.

The taxon's choice of open nest sites in shallow water means they also suffer from Red Fox predation (Macgillivray in Bourke et al. 1973). The taxon seems to nest adjacent to water so any major change in water levels could impact on breeding success (DuGuesclin pers comm.).

Much breeding habitat has been lost for the taxon in Victoria due to drainage of wetlands and retention of water for irrigation and supply purposes. Across the State, substantial areas of preferred wetland types have been lost while other wetlands have altered hydrology regimes that prevent the formation of islands.

In north-western Australia, a small breeding colony at Mandora Marshes was impacted by a disease outbreak (suspected to be botulism) that killed many birds (Hassell 1999, Rogers et al. 2005). There is also a record of mass mortality at a breeding colony of subspecies *vanrossemi* in North America, caused by *Anthocephala*, a parasitic worm which uses crabs as intermediate hosts (Patton et al. 2017). It is not known if Gull-billed Terns are especially susceptible to such disease outbreaks, or whether the likelihood of such events is influenced by human activity.

IUCN Criteria

Criterion A. Population size reduction.
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(*a*) *cannot be used for A3*]

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

No confident predictions can be made about the future. Decreases are perhaps more likely than increases, given climate-change predictions of more longer drought periods; Silver Gull increases causing reduced breeding success; and potential loss of breeding habitat due to reduced wetland flooding, and perhaps in agricultural foraging areas near breeding sites.

Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Eligible under Criterion B2 as Vulnerable

The Area of Occupancy (AoO) across the taxon's range is estimated to be 927 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

In coastal areas, the taxon carries out commuting flights between high tide roosts and intertidal foraging areas. In inland sites, although they are found in association with wetlands, they often forage over adjacent grasslands when hunting (e.g. insects and lizards).

It is suspected to have one location, as it is possible that in years where there are small numbers, a single threat (e.g. Silver Gull competition) or a range of threats to habitat could affect all birds in Victoria. From other tern species, it appears that once lost from an area they do not easily recolonise.

It has a continuing decline in (iii) and (v) above.

Criterion C. Small Population size and decline				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	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)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals				

Evidence:

Eligible under Criterion C

It is estimated that there are 10 to 300 (midpoint 200) mature individuals. The number of birds in Victoria is poorly known. In the VBA, after excluding duplicate records from individual sites, the number of sites at which Gull-billed Terns were recorded each year ranges from only one record in 7 years (including the very wet years of 1974 and 2010), to over 20 records in four years. The highest number of records was 31 sites recorded in 1980. While recorded observer effort has been inconsistent over the years, it is clear that there is considerable annual variation in Gull-billed Tern numbers in Victoria, probably with lowest numbers in wet years when there is extensive inland habitat, with more birds coming to Victoria in drought years.

The highest number of birds counted in the VBA in a single year ranged from 0 to 291 individuals. However many surveys did not record numbers, only presence/absence. When the number of birds was recorded (in 210 of 420 records), average flock size was 10.2 birds, ranging from 1-200 individuals. Average flock size annually ranges from 1 to 28.1. A weak positive correlation between annual flock size and annual number records suggests that flocks are larger in dry years when birds are recorded at more sites in the state.

In the estimates of Victorian population above, it is assumed that minimum counts occur in wet years when flock size is small; with potentially only one site and an average flock size of 10 birds, the Victorian population could as low as 10 birds at these times.

There is an inferred continuing decline, and the number of mature individuals is fewer than 250.

Criterion D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)	< 50	< 250	< 1,000
D2 Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.	-	-	D2. Typically: AoO < 20 km2 or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Endangered

It is estimated that there are 10 to 300 (midpoint 200) mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

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