

Threatened Species Assessment

Tringa stagnatilis Marsh Sandpiper

Taxonomy

Tringa stagnatilis (Bechstein, 1803)

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2abc+3bc+4bc; C1+2a(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) results in Critically Endangered. The birds are not regarded as threatened in other Australian states, so this assessment has been downgraded to Endangered EN^o to account for the influence of interstate and international populations that reduce the extinction risk in Victoria.

Species Information

Description and Life History

The Marsh Sandpiper is a medium sized member of the Tringinae family. It has a length of 22–26 cm, a wingspan of 40–45 cm and a weight of 70 g. In all plumages the species shows a contrasting outer wing, a very pale whitish tail and a bold white wedge up the back (Higgins and Davies 1996). They occur singly or in small to large flocks. They often associate with other waders and are often seen with Greenshanks, especially in saltfields. They may feed in tight co-ordinated groups, and sometimes feed with other wading birds (Higgins and Davies 1996).

The birds breed in the cool temperate region of the northern hemisphere, migrating annually to non-breeding grounds from Africa, across southern Asia to Australasia. They arrive in Australia about September to November (Higgins and Davies 1996), and adults depart about March-April. It is likely that some first-year birds migrate north with adults, while some remain in Australia for their first austral winter, not migrating north until 2 years old (Rogers et al. 2006).

Generation Length

The generation length of the Marsh Sandpiper is estimated to be 5.6 years. This is based on IUCN (2018).

Distribution

The taxon has a very broad breeding distribution, nesting in warm inland wetlands of central Asia, from easternmost Europe almost to the Pacific coast. They migrate to non-breeding grounds of freshwater and brackish wetlands, and some sheltered coastal flats, from Africa through southern Asia to Australia. Within Victoria, records are rather broadly scattered, but there are clusters of records from near-coastal wetlands on the western shores of Port Phillip Bay (largely from artificial wetlands in saltworks and sewage farms), and from saline lakes in the mid-Murray Valley, largely near Kerang and Mildura (Emison et al. 1987).

Habitat

The name "Marsh" Sandpiper better describes the breeding habitat than the non-breeding habitat in this taxon. They nest in warm inland wetlands from open steppes to the boreal forest zone, usually with marshy or grassy vegetation. They can use marshy vegetation. In the non-breeding season, preferred wetlands are often open rather than marshy. A large proportion of Victorian records are from saline wetlands (natural lakes, saltworks), where vegetation is rather sparse. They also use freshwater wetlands, and are occasionally found on sheltered flats, though this habitat use is much more rare in Victoria than it is in northern Australia (e.g. Rogers et al. 2011, Bamford et al. 2008)

In a study at the Western Treatment Plant, Marsh Sandpipers forage when wading in water between 20 and 72 mm deep (mean 43.2; SD = 13.2; n = 82), typically up to the tibio-tarsal joint, and deeper than the waters used by most other shorebird species (Rogers and Hulzebosch 2014). This study also suggest that Marsh Sandpipers tend to avoid tall vegetation, with >98% of birds foraging more than 12.5 m from vegetation >75 cm tall.

Threats

Breeding populations of Marsh Sandpiper have disappeared from eastern Europe, Belarus, Moldova and Russia as a result of habitat losses driven by agricultural intensification (IUCN 2018). It is not known if populations in the far east of the range (the likely source of migrants to Australia) experience similar pressures. On migration, it has been estimated that 40% of the East Asian - Australasian flyway population uses the Yellow Sea coast or adjacent near-coastal wetlands for migration stopovers (Barter 2002), and habitat loss in these regions is thought to be driving ongoing declines of many shorebird species (Clemens et al. 2016, Studds et al. 2007).

Within Australia the majority of Marsh Sandpipers occur in the northern half of the continent, and Clemens et al. (2016) could find no strong evidence of an Australia-wide decline. However, the relatively small populations of southern Australia showed clear declines of 13.04% per annum (95% confidence intervals of declines of 16.25 - 8.93% per annum). The causes are poorly known but it is noteworthy that a large proportion of southern Australian records come from managed wetlands where water allocations or management practices may be changing. For example, in Victoria a large proportion of records are from former saltworks where salt production has ceased, with resultant declines in the amount of water pumped through the wetlands diminishing the number of ponds providing potential foraging conditions for shorebirds Rogers et al. 2016).

Climate change threatens to reduce the availability of shallow wetlands required by the taxon.

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:

Eligible under Criterion A2 as Endangered

The population reduction over the past 18 years is estimated to be 76 to 92% (midpoint 88), based on (a), (b) and (c) above.

This is based on rates of decline in southern Australia estimated by Clemens et al. (2016). Ground counts in 2001 and 1990s summed to average of 315 birds (considerably fewer than estimates by Clemens decline rates), indicative of the uncertainty associated with count data of this mobile taxon.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Endangered

The population reduction over the next 18 years is projected to be 79 to 95% (midpoint 91), based on (b) and (c) above.

This is based on rates of decline in southern Australia (and their 95% confidence limits) documented by Clemens et al. 2016.

Eligible under Criterion A4 as Endangered

The population reduction over any 18 year period, including both past and future (up to 100 years in the future), is estimated to be 80 to 90%, based on (b) and (c) above. The causes of reduction may not have ceased, be understood or be reversible.

The taxon is assessed as Critically Endangered under these criteria, but it has been downgraded to Endangered to account for the influence of international and interstate populations that reduce the extinction risk in Victoria.

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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA), is estimated to be 194,163 km² which exceeds the threshold for criterion B.

The Area of Occupancy (AoO) across the taxon's range, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA, is estimated to be 1,036 km² but other thresholds under this criterion have not been met.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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 C1 as Endangered

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It is estimated that there are 116 mature individuals. This figure is from Hansen et al. (2016), based on average Victorian counts in recent years with an extrapolation for unsurveyed habitat. Marsh Sandpiper numbers in Victoria vary considerably from year to year, probably in response to habitat availability in inland Australia, with more birds reaching Victoria in periods of inland drought. In some years, counts in single wetlands have exceeded the Victorian population estimates above: e.g. 782 at Moolap Saltworks in 1988, 350 at Lake Cullen in 1987 (VBA). In view of this annual variability, current population estimates and projections of future change are rather tentative. Nevertheless it is clear that the Victorian population is small (in the low hundreds relative to that in the entire East Asian - Australasian Flyway (estimated as 130,000, Hansen et al. 2016), and that declines in southern Australia are occurring (Clemens et al. 2016)

A continuing decline of 40 to 60% is estimated to occur within one generation.

Eligible under Criterion C2 as Endangered

It is estimated that there are 116 mature individuals and there is an inferred continuing decline. Sites that contributed most to the declines documented in Clemens et al. (2016) (e.g. Coorong, saltworks in Victoria) may now have reached the point at which Marsh Sandpiper numbers cannot decline much further (as they are approaching zero). If this is the case, it is possible that the declines in Victoria will level off.

The percentage of mature individuals in one subpopulation is 90-100%.

The taxon is assessed as Critically Endangered under these criteria, but it has been downgraded to Endangered to account for the influence of international and interstate populations that reduce the extinction risk in Victoria.

Criterion D - Very small or restricted populations			
	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 km ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Vulnerable

It is estimated that there are 116 mature individuals.

The taxon is assessed as Endangered under this criterion, but it has been downgraded to Vulnerable to account for the influence of international and interstate populations that reduce the extinction risk in Victoria.

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

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