



The Minister approved this conservation advice on 25/06/2015 and included this subspecies in the Vulnerable category, effective from 08/07/2015

Conservation Advice

Zoothera lunulata halmaturina

Bassian thrush (South Australian)

Taxonomy

Generally accepted as *Zoothera lunulata halmaturina* (Bassian thrush (South Australian)), A.G. Campbell, 1906. It is one of three subspecies of Bassian thrush, and is endemic to Australia.

Summary of assessment

Conservation status

Vulnerable: Criterion 3 C2 (a)(ii)

Zoothera lunulata halmaturina has been found to be eligible for listing under Criterion 3 only.

Species/subspecies can be listed as threatened under state and territory legislation. For information on the listing status of this subspecies under relevant state or territory legislation, see <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

Reason for conservation assessment by the Threatened Species Scientific Committee

This advice follows assessment of new information provided to the Committee to list *Zoothera lunulata halmaturina*.

Public Consultation

Notice of the proposed amendment and a consultation document was made available for public comment for > 30 business days between 30 October 2014 and 21 December 2014. Any comments received that were relevant to the survival of the subspecies were considered by the Committee as part of the assessment process.

Subspecies Information

Description

The Bassian thrush (South Australian) is olive-brown to golden brown above, and whitish below (Pizzey & Knight, 1997). It has mottled plumage, with scalloped black crescent-shaped bars on its back, rump and head and brown-black scalloping on its underparts (DEH, 2008). It has a large, straight bill with a hooked tip and a narrow white eye-ring (Higgins et al., 2006). In flight, a broad dark diagonal bar across the white underside of its wing can be seen (DEH, 2008). It is very similar to the russet-tailed thrush (*Zoothera heinei*) but is slightly larger with a slightly longer tail (Higgins et al., 2006).

Distribution

The Bassian thrush (South Australian) occurs on Kangaroo Island, the Mt Lofty Ranges as far north as Tanunda (Schodde & Mason, 1999), and in the southern Flinders Ranges from Wirrabara Forest Reserve and Telowie Gorge Conservation Park to Mt Remarkable National Park (Garnett et al., 2011). Movements of other subspecies suggest that the mainland and Kangaroo Island birds are likely to constitute a single subpopulation (Garnett, 1992). The subspecies is confined to remnant habitats on the mainland but is widespread on Kangaroo Island (Garnett et al., 2011).

Relevant Biology/Ecology

The subspecies mostly inhabits damp eucalypt forest or woodland (Garnett et al., 2011). Densely forested areas and gullies are favoured, usually with a thick canopy overhead, a thick understorey of small trees and tall shrubs, and leaf-litter below (DEH, 2008). However, it has also been recorded breeding in exotic Monterey pine (*Pinus radiata*) plantations, and on Kangaroo Island also uses mature mallee eucalypt woodland (Garnett et al., 2011). In much of its range, suitable habitat is confined to creek lines or dune swales (Garnett et al., 2011) where the birds forage for worms among damp leaf litter. Damp habitats seem particularly important in summer (DEH, 2008; Garnett et al., 2011).

It is mostly sedentary, although there is some evidence for seasonal movements especially altitudinally (Higgins et al., 2006). It is shy and secretive with a low flight, its mottled pattern also making it inconspicuous in leaf-litter (Pizzey & Knight, 1997). Its diet consists of invertebrates, mainly earthworms and beetles, and occasionally fruit and it mainly forages on the ground by probing leaf litter, but sometimes takes fruit from low shrubs (Higgins et al., 2006). It forages singly, or in small groups (possibly family groups) of two to five and it is probably territorial (Higgins et al., 2006; DEH, 2008).

Breeding occurs from May to November, with 2-3 eggs laid once a year in a large, bowl-shaped nest which is usually placed in the fork of a tree, or occasionally on a thick horizontal branch (DEH, 2008). Nest sites are hidden amongst dense foliage with placement ranging from near ground level to up to 15 m above the ground (DEH, 2008). The young are altricial and nidicolous, and are fed by both sexes (Higgins et al., 2006). The generation time is estimated at 5.2 years (DEH, 2008; BirdLife International, n.d.), derived from an age at first breeding of 1.0 year and an average annual survival of 46 % (Garnett et al., 2011).

Threats

Threats differ between the mainland and Kangaroo Island. On the mainland, much of the best habitat has been cleared for agriculture (Garnett et al., 2011). Currently, inappropriate fire regimes are the major threat and can make remaining habitat unsuitable for the subspecies (Garnett et al., 2011). Remaining habitat is threatened by reduced environmental flows as a result of increased water use and water interception by farm dams (Garnett et al., 2011; van Weenan, pers comm., 2014). Other threats include weed invasion, grazing by cattle (*Bos taurus*), rabbits (*Oryctolagus cuniculus*) and kangaroos (*Macropus spp.*), competition with the introduced common blackbird (*Turdus merula*), and potential predation by foxes (*Vulpes vulpes*) and feral, or uncontrolled domestic, cats (*Felis catus*) (Garnett et al., 2011). Overgrazing in areas of remnant vegetation and also trampling (opening up of vegetation) by introduced or overabundant native herbivores is reducing the availability of suitable vegetation cover in many areas (van Weenan, pers comm., 2014).

On Kangaroo Island much of the decline in the last decade can be attributed to below-average rainfall, and it is not yet known whether sites that dried out entirely will be re-occupied (Garnett et al., 2011). Drought impacts on the subspecies are likely to be far higher if moist gullies become less productive (van Weenan, pers comm., 2014). Feral cats (*Felis catus*) on the island may also result in the mortality of some adults and nestlings (Garnett et al., 2011). While much habitat has been cleared gullies are often undisturbed and rarely burnt (Garnett et al., 2011).

How judged by the Committee in relation to the EPBC Act Criteria and Regulations

Criterion 1. Population size reduction (reduction in total numbers)			
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>	<p style="text-align: center;"><i>based on any of the following:</i></p> <ul style="list-style-type: none"> (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:

Insufficient data to determine eligibility

As at 2010, the population of the Bassian thrush (South Australian) was estimated to be 4200 mature individuals and declining (Garnett et al., 2011). Based on a population density of 4 birds/km², and an area of occupancy of 1000 km², the total number of mature individuals on Kangaroo Island was estimated to be around 4000 (Garnett et al., 2011). Recent estimates suggest the population density may be closer to 2 birds/km² in the Mount Lofty Ranges, however it is unclear whether this density estimate is applicable across the subspecies geographic distribution (van Weenan, pers comm., 2014). Anecdotal reports suggest a decline in calls heard on Kangaroo Island in the last decade (Pedler, pers comm., cited in Garnett et al., 2011), but no other reports of decline. The subspecies is very rare in the Mt Lofty Ranges, where there are probably < 100 birds and where it is thought to have declined by 30% (Possingham & Possingham, 2008). There may also be about 100 birds in the southern Flinders Ranges, based on the area of suitable habitat (Garnett et al., 2011). The available information suggests that the Bassian thrush (South Australian) is declining, however there is insufficient data available to determine the rate of past, current or future decline of the subspecies across its range.

The Committee considers that there is insufficient information to determine the eligibility of the subspecies for listing in any category under this criterion.

Criterion 2. Geographic distribution is precarious for either extent of occurrence AND/OR 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; (number of mature individuals)			

Evidence:

Not eligible

As at 2010, the extent of occurrence of the Bassian thrush (South Australian) was estimated to be 7900 km² and the area of occupancy estimated to be 1000 km² (Garnett et al., 2011). However, while the population appears to be declining, the subspecies exists at more than 10 locations and it has not exhibited extreme fluctuations in numbers (Garnett et al., 2011).

Following assessment of the information available the Committee has determined that the subspecies' extent of occurrence and area of occupancy are limited, however its geographic distribution is not considered to be precarious for its survival. Therefore, the subspecies has not been demonstrated to have met this required element of this criterion.

Criterion 3. Small population size and decline			
	Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (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 3 C2 (a)(ii) for listing as Vulnerable

As at 2010, the population of the Bassian thrush (South Australian) was estimated to be 4200 mature individuals with an inferred continuing decline in numbers (Garnett et al., 2011). Based on a population density of 4 birds/km², and an area of occupancy of 1000 km², the total number of mature individuals on Kangaroo Island was estimated to be around 4000 (Garnett et al., 2011). Recent estimates suggest the population density may be closer to 2 birds/km² in the Mount Lofty Ranges where the subspecies is extremely rare. However, it is unclear whether this latter density estimate is applicable across the subspecies total geographic distribution (van Weenan, pers comm., 2014). On the balance of the information available it would appear that the number of mature individuals is between 2100 and 4200, but more likely closer to the upper end of this range, still clearly meeting the requirements for listing as vulnerable. Furthermore, the subspecies geographic distribution is considered precarious for its survival as 100% of mature individuals are in one subpopulation (Garnett et al., 2011).

The Committee considers that the subspecies is eligible for listing as Vulnerable as the estimated total number of mature individuals is limited, and geographic distribution is precarious for the survival of the subspecies because 100% of mature individuals exist in one subpopulation and there is an inferred decline in the number of individuals.

Criterion 4. Very small population			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
Number of mature individuals	< 50	< 250	< 1,000

Evidence:

Not eligible

As at 2010, the population of the Bassian thrush (South Australian) was estimated to be 4200 mature individuals (Garnett et al., 2011).

The total number of mature individuals is 4200 which is not considered extremely low, very low or low. Therefore, the subspecies has not been demonstrated to have met this required element of this criterion.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

Evidence:

Insufficient data to determine eligibility

Population viability analysis has not been undertaken for this subspecies, therefore there is insufficient information to assess against this criterion.

Conservation Actions

Recovery Plan

There should not be a recovery plan for *Zoothera lunulata halmaturina* (Bassian thrush (South Australian)) as conservation advice for the subspecies would provide sufficient direction to implement priority actions and mitigate against the key threats.

Primary Conservation Objectives

1. Populations of the Bassian thrush (South Australian)) retained in the Mt Lofty Ranges and southern Flinders Range

Conservation and Management Actions

1. Maintain the subspecies' habitat values in all mainland reserves
2. Protect remnant habitats on the mainland from wildfire
3. Increase the amount of moist forest habitat available to this subspecies in the Mount Lofty Ranges through the restoration of riparian vegetation communities
4. Work with local governments and stakeholders to ensure subspecies habitat characteristics are considered when watercourse restoration planning and implementation is undertaken

Monitoring priorities

1. Monitor numbers on the mainland
2. Survey Kangaroo Island to determine density and abundance

Information and research priorities

1. Assess trends in numbers at Mt Lofty Ranges, southern Flinders Ranges, and Kangaroo Island
2. Establish a baseline for a standardised population monitoring program

Recommendations

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the Vulnerable category:
Zoothera lunulata halmaturina
- (ii) The Committee recommends that there should not be a recovery plan for this subspecies.

Threatened Species Scientific Committee

04/03/2015

References cited in the advice

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