

Conservation Advice

Amytornis merrotsyi merrotsyi

short-tailed grasswren (Flinders Ranges)

Taxonomy

Conventionally accepted as *Amytornis merrotsyi merrotsyi* (short-tailed grasswren (Flinders Ranges)) (Mellor, 1913). The short-tailed grasswren (Flinders Ranges) is one of two subspecies of *A. merrotsyi*.

Conservation status

Vulnerable: Criterion 2 B1,B2,(a),(b)(ii)(iii)(v); Criterion 3 B,(a),(b)(ii)(iii)(v).

Species can also 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 information provided by a Committee nomination based on the information provided in the *Action Plan for Australian Birds 2010*, as developed by Birdlife Australia (Garnett et al., 2011).

Description

Short-tailed grasswrens are medium-sized, slim-bodied and have a short-tail. They have a grey-brown to dark rufous/dark red-brown upper body with fine black and white streaking and dusky breast-streaking. Adult females are differentiated from males by a small rufous-patch on the rear flanks (Higgins et al., 2001).

Short-tailed grasswrens (Flinders Ranges) are similar to striated grasswrens (*A. striatus*), western grasswrens (*A. textilis*) (Higgins et al., 2001) and the Gawler Ranges subspecies of short-tailed grasswren (*A. m. pedleri*). Short-tailed grasswrens are distinguishable from striated grasswrens by their significantly shorter tail and slightly heavier bill, as well as other subtle differences in colouration: the species is distinguishable from western grasswrens by their significantly shorter tail, smaller size, slimmer appearance, finer bill and considerably brighter rufous upperparts (Higgins et al., 2001). The Flinders Ranges subspecies of short-tailed grasswren is distinguishable from the Gawler Ranges subspecies by their noticeably lighter colouration (Christidis et al., 2008), less coarsely streaked chin, throat and breast and paler buff belly and flanks (Higgins et al., 2010).

Short-tailed grasswrens have a high pitched contact call and are said to squeak when issuing an alarm call, however little else is known of their song (Higgins et al., 2001).

Distribution

Short-tailed grasswrens (Flinders Ranges) are distributed across the Flinders Ranges, South Australia, in scattered and disjunct sites (Christidis et al., 2008) between Mt Neil in the north and Nelshaby in the south (Garnett et al., 2011). Short-tailed grasswrens occur at approximately 10 sites across their range and there are four main subpopulations: north of Quorn between Dutchman's Stern and Buckaringa and formerly extending to the Ragless Range; in and adjacent to the south-east corner of Flinders Ranges National Park; between Black Range and Belton; in the Gammon ranges and north of Arkaroola (Carpenter, 2004; Christidis et al., 2008). Short-tailed grasswrens may no longer occur at the southern extremity of their historic range, at Telowie Gorge near Nelshaby, where they were last

recorded in 1981 (Parker, 1982; Higgins et al., 2001; Carpenter et al., 2003). However, the subspecies has recently been reported at two new locations, in the Horseshoe range east of Quorn and near Saltia, south-west of Quorn; though population size has yet to be determined at either of these locations (Pedler, pers comm., 2014). The largest population of this subspecies inhabits the south-east corner of Flinders Ranges National Park. Studies suggest that this population may have increased following extensive and intensive habitat management, including fox baiting and reduction of native herbivores (Carpenter, pers comm., 2014).

Relevant Biology/Ecology

Short-tailed grasswrens inhabit rocky (quartzitic) hillsides and hilltops, steep-sided gullies, stony rises and ridge-crests and, less often, foothills (Garnett et al., 2011; Higgins et al., 2001). The vegetation is spinifex (*Triodia*) tussock grassland, usually with scattered low shrubs, particularly *Acacia* spp., *Daviesia genistifolia*, *Xanthorrhoea quadrangulata* and *Cassia* spp., and occasionally an open overstorey of Cypress pine (*Callitris* spp.) or mallee (*Eucalyptus* spp.) (Christidis et al., 2008). Short-tailed grasswrens have been known to recolonise habitat patches in Flinders Ranges National Park within 5–7 years after a fire, however this occurred only where spinifex regeneration was good, usually following wet seasons, and predator numbers were low (Carpenter, pers comm., 2014). Short-tailed grasswren populations reach peak densities 10–30 years after fire (Carpenter, pers comm., 2014).

There is very little known about the breeding behaviour of short-tailed grasswrens, however anecdotal evidence suggests they breed in dispersed territories which may disband outside of the breeding season (Higgins et al., 2001). Eggs have been recorded in nests throughout September and October, with nests located in clumps of spinifex (Higgins et al., 2001). Nests range from oval shaped to domed and are loosely constructed utilising dry spinifex grass and sometimes incorporating rabbit fur as a nest liner (Higgins et al., 2001). Breeding pairs produce elongated oval eggs that are equally rounded at both ends; colouration is pearl white with reddish-brown spots and blotches concentrated at the larger end (Higgins et al., 2001). A generation time of 9.7 years (BirdLife International, 2011) is derived from an age at first breeding of 2.3 years and a maximum longevity of 17.0 years, both extrapolated from fairy-wrens (*Malurus* spp.).

Short-tailed grasswrens forage mostly on the ground, eating seeds, fruits, insects and other invertebrates (Higgins et al., 2001). There is a lack of detailed information available on the feeding behaviour of short-tailed grasswrens.

Threats

Excessive frequencies of fires, both natural and human mediated, along with grazing, have been identified as the most immediate threats to short-tailed grasswrens (Higgins et al., 2001). Burning is often undertaken deliberately to encourage the growth of green 'pick' for grazing by stock (Higgins et al., 2001). Intense and/or frequent fires can remove many of the spinifex refuges utilised by the subspecies in times of fire (Higgins et al., 2001). Furthermore, intense fires have the capacity to eliminate entire sub-populations in a single event (Carpenter, pers comm., 2014). While short-tailed grasswrens may recolonise habitat patches 5 years after a fire this is unlikely to occur unless spinifex regeneration is good. Birds have not recolonised large areas of Flinders Ranges National Park where spinifex regeneration has been sparse following fires (Carpenter, pers comm., 2014). Short-tailed grasswrens (Flinders Ranges) have also been identified as one of 55 Australian bird taxa considered likely to be exposed to increases in the frequency and intensity of fires as a result of climate change (Garnett et al., 2013).

In addition, large swathes of the Flinders Ranges have experienced habitat degradation as a result of various grazing pressures, including by feral goats (*Capra hircus*) (Higgins et al., 2001). Reports suggest that sheep (*Ovis aries*) grazing is also degrading habitat, with dorper sheep posing a greater threat than traditionally grazed merino sheep, as they are reputedly more destructive browsers and are more likely to venture into the hilltops. Predation by foxes

(*Vulpes vulpes*), possibly in association with fire, may also be a significant threat (Carpenter, 2004).

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

Criterion 1: Reduction in numbers (based on any of A1 – A4)

- A1. An observed, estimated, inferred or suspected population very severe $\geq 90\%$, severe $\geq 70\%$ or substantial $\geq 50\%$ size reduction over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
- (a) direct observation
 - (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.
- A2. An observed, estimated, inferred or suspected population very severe $\geq 80\%$, severe $\geq 50\%$ or substantial $\geq 30\%$ size reduction over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- A3. A population size reduction very severe $\geq 80\%$, severe $\geq 50\%$ or substantial $\geq 30\%$, projected or suspected to be met within the next 10 years or three generations (up to a maximum of 100 years), whichever is the longer, based on (and specifying) any of (b) to (e) under A1.
- A4. An observed, estimated, inferred, projected or suspected population size reduction very severe $\geq 80\%$, severe $\geq 50\%$ or substantial $\geq 30\%$ over any 10 year or three generation period (up to a maximum of 100 years into the future), whichever is longer, where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

Evidence

Not applicable: past, current or future population declines are thought unlikely to exceed 30% in any three generation period.

It is estimated that there are approximately 5000 mature individuals spread across four sub-populations (Garnett et al., 2011). It is suspected that short-tailed grasswren populations are declining (Garnett et al., 2011). However, past, current or future population declines are thought unlikely to exceed 30% in any three generation period (Garnett et al., 2011).

Criterion 2: Geographic distribution (based on either of B1 or B2)

- B1. Extent of occurrence estimated to be very restricted $< 100 \text{ km}^2$, restricted $< 5000 \text{ km}^2$ or limited $< 20\,000 \text{ km}^2$
- B2. Area of occupancy estimated to be very restricted $< 10 \text{ km}^2$, restricted $< 500 \text{ km}^2$ or limited $< 2000 \text{ km}^2$

AND

Geographic distribution is precarious for the survival of the species, (based on at least two of a–c)

- a. Severely fragmented or known to exist at a limited location.

- b. Continuing decline, observed, inferred or projected, in any of the following:
 - (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 the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.

Evidence

Eligible for listing as Vulnerable: subspecies has a limited extent of occurrence and area of occupancy, it exists at a limited location, there has been an observed continuing decline in area of occupancy and extent and quality of habitat and an inferred continuing decline in the number of mature individuals.

The predicted extent of occurrence for short-tailed grasswrens (Flinders Ranges) is approximately 9300 km² (limited) and the predicted area of occupancy 1000 km² (limited) (Garnett et al., 2011). There is also evidence to suggest that the subspecies exists at a limited location. The IUCN defines 'location' as "a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations". Thus it can be argued that short-tailed grasswrens (Flinders Ranges) exist at a limited location as the subspecies' geographic distribution is limited, all known extant individuals are located in a geographically distinct area where excessive frequency of fire is the primary threat (Garnett et al., 2011), and intense fires have the capacity to extirpate entire subpopulations in a single event (Carpenter, pers comm., 2014).

There is an inferred continuing decline in the area of occupancy, extent and quality of habitat and number of mature individuals as a result of frequent fires and grazing pressures on grasswren habitat (Garnett et al., 2011). There have been no sightings of short-tailed grasswrens in some sites at which they were previously recorded, such as Telowie Gorge near Nelshaby, for several decades (Parker, 1982; Higgins et al., 2001; Carpenter et al., 2003). Regular natural and human mediated fires, along with grazing, have been identified as the most immediate threats to short-tailed grasswrens (Higgins et al., 2001). Given the frequency of extensive fires in the region, it is assumed that the area of occupancy and the amount and quality of habitat are declining (Garnett et al., 2011). Short-tailed grasswrens take several years to recolonise habitat patches after fire and are only likely to recolonise areas where spinifex regeneration is good and predator numbers are low (Carpenter, pers comm., 2014).

Criterion 3: The estimated total number of mature individuals is very low <250, low <2500 or limited <10 000; and either of (A) or (B) is true

- (A) evidence suggests that the number will continue to decline at a very high (25% in 3 years or 1 generation (up to 100 years), whichever is longer), high (20% in 5 years or 2 generations (up to 100 years), whichever is longer) or substantial (10% in 10 years or 3 generations (up to 100), whichever is longer) rate; or
- (B) the number is likely to continue to decline and its geographic distribution is precarious for its survival (based on at least two of a – c):
 - a. Severely fragmented or known to exist at a limited location.

- b. Continuing decline, observed, inferred or projected, in any of the following:
 - (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 the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.

Evidence

Eligible for listing as Vulnerable: the number of mature individuals is limited, the population exists at a limited location and there is evidence of a continuing decline in area of occupancy and extent and quality of habitat and an inferred continuing decline in the number of mature individuals.

Current population estimates of short-tailed grasswrens (Flinders Ranges) suggest a total of 5000 mature individuals, with a suspected ongoing decline in numbers (Garnett et al., 2011). The largest subpopulation of short-tailed grasswrens is thought to occur around Stokes Hill in the south-east of the Flinders Ranges (Carpenter, 2004) comprising an estimated 1000-2000 individuals. There is insufficient monitoring data to estimate the extent of the decline in short-tailed grasswrens but the increased frequency of intense fires suggests that there is an ongoing decline in the area of occupancy, the extent and quality of available habitat and the number of mature individuals (Garnett et al., 2011).

Short-tailed grasswrens take several years to recolonise habitat patches after fire and are only likely to recolonise areas where spinifex regeneration has been good and predator numbers are low (Carpenter, pers comm., 2014). Furthermore, intense fires have the capacity to eliminate entire sub-populations in a single event (Carpenter, pers comm., 2014). Short-tailed grasswrens also appear to exist at a limited location.

Criterion 4: Estimated total number of mature individuals:

- (a) Extremely low <50
- (b) Very low <250
- (c) Low <1000

Evidence

Not applicable: The total number of mature individuals is 5000 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: Probability of extinction in the wild based on quantitative analysis is at least:

- (a) 50% in the immediate future, 10 years or three generations (whichever is longer); or
- (b) 20% in the near future, 20 years or five generations (whichever is longer); or
- (c) 10% in the medium-term future, within 100 years.

Evidence

Not applicable: population viability analysis has not been undertaken.

Public Consultation

Notice of the proposed amendment was made available for public comment for 30 business days between 14 May 2014 and 30 June 2014. Any comments received that are relevant to the survival of the subspecies have been considered by the Committee.

Recovery Plan

There should not be a recovery plan for *Amytornis merrotsyi merrotsyi* given the small number of locations occupied by the subspecies (<10) and the fact that some locations are in a National Park. Conservation advice should provide sufficient direction to implement priority actions and mitigate against key threats.

Recovery and Impact avoidance guidance

Primary Conservation Objectives

1. Establish a stable population of short-tailed grasswrens (Flinders Ranges).
2. Increase the area of suitable habitat for short-tailed grasswrens (Flinders Ranges).

Important populations

All populations are of high conservation value.

Important habitat for the survival of the subspecies

Rocky (quartzitic) hillsides and hilltops, steep-sided gullies, stony rises and ridge-crests and, less often, foothills are all important habitats. In particular, habitats where the vegetation comprises spinifex (*Triodia*) tussock grassland, usually with scattered low shrubs, particularly *Acacia* spp., *Daviesia genistifolia*, *Xanthorrhoea quadrangulata* and *Cassia* spp., and occasionally an open overstorey of Cypress pine (*Callitris* spp.) or mallee (*Eucalyptus* spp.) (Christidis et al., 2008) is of high conservation value. Furthermore, the subspecies appears to show a preference for habitat where post fire regeneration has occurred over a period of 10-30 years, at which time they reach peak densities (Carpenter, pers comm., 2014).

Information required and research priorities

1. Investigate and determine population trends at regularly monitored sites.
2. Investigate effects of fire on the subspecies distribution and determine optimal fire regimes.
3. Investigate and determine the impacts of predation by foxes and cats.

Management actions required

1. Actively manage fires to reduce overall extent and frequency, especially high intensity fires.
2. Implement measures to manage sheep grazing in areas of spinifex regeneration.
3. Investigate and implement measures to reduce the population of feral goats.
4. If appropriate, design and implement a feral predator control 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:

Amytornis merrotsyi merrotsyi

- (ii) The Committee recommends that there should not be a recovery plan for this subspecies.

Threatened Species Scientific Committee

03/09/2014

References cited in the advice

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