

Conservation Advice

Amytornis woodwardi

white-throated grasswren

Taxonomy

Conventionally accepted as *Amytornis woodwardi* (white-throated grasswren) Hartert, 1905.

Conservation status

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

Species can also be listed as threatened under state and territory legislation. For information on the listing status of this species 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 a committee nomination based on information provided in the *Action Plan for Australian Birds 2010*, as developed by Birdlife Australia (Garnett et al., 2011).

Description

White-throated grasswrens are small passerines that are robust and long-tailed, with colouration varying from black with bold white streaks on top and sides of head and neck to mantle, chestnut on back and rump, black on wings and tail with chestnut edges to feathers, white on throat and upper breast and black with white streaks on gorget on lower breast (BirdLife International, 2011). Males have a black whisker mark and are rusty below, females are brighter with white lores and diagnostic dark rusty underparts (Simpson & Day, 1993).

White-throated grasswrens are similar to Carpentarian grasswrens (*A. dorotheae*), however Carpentarian grasswrens are smaller, with less black colouration, red brown wings and no breastband; Carpentarian grasswrens also occupy a different range to white-throated grasswrens as they are distributed in the east of the Northern Territory and into Queensland (Pizzey, 1991).

White-throated grasswrens have a song comprising of a series of rising and falling trills and notes; when feeding in groups they are known for consistent animated chirping and when sounding an alarm their call becomes a strong sharp note repeated sporadically (Pizzey, 1991).

Distribution

White-throated grasswrens are distributed across western Arnhem Land, Northern Territory, on and around the Arnhem Land escarpment, between Katherine and Maningrida (Noske, 1992). There have been few surveys in this inaccessible range since Noske (1992), but anecdotal information from birdwatchers at the periphery of the range suggests that white-throated grasswrens are increasingly hard to locate at sites where they were once seen regularly and are certainly absent at some sites mentioned by Noske (1992), such as Plum Tree Creek. A long-term study investigating trends in the abundance of bird species in Kakadu National Park, through surveying of 136 sites over the period 2001-2009, indicated that white-throated grasswrens had declined significantly (Woinarski et al., 2012). White-throated grasswrens were found at only six of the surveyed sites and from the 2001-2004 survey period to the 2007-2009 survey period their mean abundance across all surveyed sites decreased from 0.09 to 0 (Woinarski et al., 2012). Woinarski et al (2012) provide the caveat that their study was correlative and recommend that future studies of individual

threatened species involve monitoring regimes targeted towards assessing population trends for these species.

Garnett (1993) described the range of white-throated grasswrens to be stable in appearance across historical times, while Pizzey (1991) stated that the species was locally common. However, given the recent increase in fire frequency across their range, numbers are predicted to have declined and the remaining birds are thought to be severely fragmented into subpopulations of <1000 mature individuals each (NRETA, 2006). A 2011 survey, designed to maximise the likelihood of finding white-throated grasswrens, recorded a total of only 30 individuals in 11 of the 156 sites surveyed (Mahney et al., 2011). Mahney et al (2011) note that their survey was confined to sites within Kakadu National Park and that there area of potentially suitable habitat for the species extends across a larger area of the Arnhem Land Plateau. Notably, while the survey did record grasswrens in previously unrecorded locations it did not detect any grasswrens at Gunlom or Lower Yurmikmik, which previously had the highest number of records for the species (Mahney et al., 2011). The survey recorded white-throated grasswrens in sites with a variety of fire histories, however as the study focussed primarily on sites without a recent fire researchers were unable to draw conclusions about the species response to fire (Mahney et al., 2011). Nevertheless, it is relevant to note that the ecologically similar Carpentarian grasswren (*A. dorotheae*) may not reoccupy sites for at least three years after a fire event (Harrington et al., 2009).

Cultural Significance

The white-throated grasswren occurs in Arnhem Land in an area occupied by the indigenous stone country peoples that belong to the Bininj Kunwok language group. The white-throated grasswren is known by several different names according to the dialect of the different stone country groups; in Kunwinjku it is called *yirlinkirrkirrkir* or *yirrindjirrin* and in Kune dialect it is called *djirnidjirrinrinjken*. Little else is known about the cultural significance of white-throated grasswrens.

Relevant Biology/Ecology

White-throated grasswrens area of occupancy is limited to sandstone escarpments and plateaux in the tropics (Higgins et al., 2001). Ideal habitat comprises unbroken high plateaux and ridge-tops that are flat and sparsely vegetated (Noske, 1992; Garnett, 1993). Sub-optimal habitat comprises steep ledges above gorges or stepped hillsides along broad valleys, including tors, pinnacles and narrow side gullies (Noske, 1992). The preferred habitat of white-throated grasswrens supports bare rock, a semi-continuous ground cover of hummock grasses, mature spinifex (*Triodia* spp.), intermittent herbs and a sparse layer of shrubs and trees, predominantly *Acacia* and *Eucalyptus* species (Schodde & Mason, 1975; Noske, 1992). Cliff ledges and rock crevices under boulders provide refuge from predators, fire and the sun (Schodde & Mason, 1975; Noske, 1992).

White-throated grasswrens are thought to be socially monogamous with breeding pairs maintained year-round (Higgins et al., 2001). White-throated grasswrens are also thought to engage in cooperative breeding, where additional adults assist in the raising of young (Higgins et al., 2001). Breeding occurs from December to June, and territory size is around 10 ha (Noske, 1992). The birds are thought to breed in territories that are sometimes, but not always, contiguous (Noske, 1992). Nests consist of bulky dome-shaped structures with thick roofs and wide entrances towards the top; building materials include grass culms, leaves of *Acacia*, *Eucalyptus* and *Grevillia* and paperbark bark (Schodde & Mason, 1975). Birds are known to conceal nests in clumps of hummock grass close to the ground (Schodde & Mason, 1975; Noske, 1992). Breeding pairs generally produce two eggs which are slender ovals rounded at both ends; eggs are slightly glossy and finely, sparsely speckled and blotched with red-brown, purple-grey and pale sepia (Pizzey, 1991). 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 values extrapolated from fairy-wrens (*Malurus* spp.).

The diet of white-throated grasswrens primarily consists of grass and sedge stems, seeds and insects (Noske, 1992; Higgins et al., 2001). The species is known to forage on the ground over bare rock, in crevices under boulders, among leaf litter, on grass mats and among the leaves and stems of shrubs (Schodde & Mason, 1975; Noske, 1992). Birds are believed to forage either singly, in pairs or small loose groups (Noske, 1992). The species engages in feeding behaviour from shortly after sunrise through to mid-morning following a set course within their home-range, they then rest during the middle of the day (Schodde & Mason, 1975).

Threats

White-throated grasswrens are probably threatened by increased extent and frequency of fire (Woinarski et al., 2007; Woinarski et al., 2009; Woinarski et al., 2012). In 1980-1995, in heath habitats of Kakadu National Park, 69% of plots had fires recurring within 3 years and only 11% burnt only once or remained unburnt (Russell-Smith et al., 2002). Until recently, fire regimes across western Arnhem Land are characterised by high annual frequencies of large late dry season fires (Edwards & Russell-Smith, 2009) that cover large areas (Yates et al., 2008). Furthermore, due to the naturally restricted geographical range common to *Amytornis* species, subpopulations and entire populations have an increased likelihood of being affected by even a single fire event as fires continue to increase in intensity and frequency (Skroblin & Murphy, 2013). Despite the rocky habitat offering protection from fires (Noske, 1992), many fires are too hot and extensive to leave functional unburned refugia. However, it is believed that regular, low-intensity planned burnings may benefit the species by maintaining areas of unburnt spinifex. The response of white-throated grasswrens to fire is unknown, though the ecologically similar Carpentarian grasswren (*A. dorotheae*) may not reoccupy areas until at least 3 years after a fire (Harrington et al., 2009). While the white-throated grasswrens exact fire response is unknown, rangers of the Warddeken and Djelk Indigenous Protected Areas have observed that the species appears to require access to long unburnt sites for at least some stages of their life cycle (Stevens et al., 2011).

It is also believed that the progressive vegetational change, notably replacement of spinifex by annual sorghum (*Sarga* spp.), may reduce habitat suitability as well as supporting further intense fires (Woinarski, 1992). Predation by feral cats (*Felis catus*) has also been proposed as a potential threat to white-throated grasswrens (Woinarski et al., 2012).

White-throated grasswrens have been identified as one of 39 Australian bird species, occurring in terrestrial habitats and inland waters, that are most exposed to either a loss of climate space or a reduction in climatic suitability; white-throated grasswrens are also 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).

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 3-generation period.

The number of mature individuals in 2010 was estimated to be 10 000 (Garnett et al., 2011). Previous population estimates varied greatly, with Noske (1992) predicting that there may be as many as 50 000 individuals, while Woinarski (1992) suggested numbers ranging from 5000 to 10 000 individuals. There is greater agreement that the number of mature individuals is decreasing (Garnett et al., 2011; Woinarski, 1992), with reports of significant declines in Kakadu National Park (Woinarski, 1992). 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: the extent and area of occurrence are limited, the population is severely fragmented and there have been inferred and observed declines in extent of occupancy, area of occurrence and number of locations.

The predicted extent of occurrence for white-throated grasswrens is 10 000 km² and the area of occupancy is 1000 km², both of which are classified as limited (Garnett et al., 2011). Furthermore the population is assessed as being severely fragmented (Garnett et al., 2011).

Based on fire history, Garnett et al. (2011) made a precautionary assessment that >50% of the species' area of occupancy could be in habitat patches too small to support a viable population. Surveying of sites previously inhabited by white-throated grasswrens in Kakadu National Park indicates that the species' area of occupancy has decreased (Woinarski, 2009). Anecdotal information from birdwatchers at the periphery of the species' range suggests that white-throated grasswrens are increasingly hard to locate at sites where they were once seen regularly (Noske, pers comm., 2013) and absent at some sites previously surveyed by Noske (1992), such as Plum Tree Creek.

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 population is considered limited and there has been an observed decline in the extent of occurrence, the area of occupancy, the quality of habitat and the number of locations in which it is found.

The current number of mature individuals is estimated to be 10 000 (Garnett et al., 2011). Previous population estimates have varied greatly, with Noske (1992) predicting that there may be as many as 50 000 individuals, while Woinarski (1992) suggested that numbers were more likely to range from 5000 to 10 000 individuals.

There is somewhat greater agreement that the number of mature individuals is decreasing (Garnett et al., 2011; Woinarski, 1992; Woinarski et al., 2012), with ongoing reports of significant subpopulation declines in Kakadu National Park (Woinarski, 1992; Woinarski et al., 2012). A long-term study investigating trends in the abundance of bird species in Kakadu National Park, through surveying of 136 sites over the period 2001-2009, indicated that white-throated grasswrens had declined significantly (Woinarski et al., 2012). White-throated grasswrens were found at only six of 136 sites surveyed and from the 2001-2004 survey period

to the 2007-2009 survey period their mean abundance across all surveyed sites decreased from 0.09 to 0 (Woinarski et al., 2012). Furthermore, a 2011 survey, designed to maximise the likelihood of finding white-throated grasswrens, recorded a total of only 30 individuals in 11 of the 156 sites surveyed (Mahney et al., 2011). Notably, while the survey did record grasswrens in previously unrecorded locations it did not detect grasswrens at Gunlom or Lower Yurmikmik, which previously had the highest number of records for the species (Mahney et al., 2011).

White-throated grasswrens were assessed by NRETA (2006) as being severely fragmented into subpopulations of <1000 mature individuals each, though it was noted that subpopulation structure is not well known, and fragmentation or continuity of populations is uncertain. White-throated grasswren habitat continues to be degraded by frequent, intense late season fires.

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 10 000 which is not considered extremely low, very low or low. Therefore, the species 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 species have been considered by the Committee.

Recovery Plan

There should not be a recovery plan for *Amytornis woodwardi* as, given that the majority of the species habitat lies within Kakadu National Park and there are existing fire management plans across most of its range, conservation advice for the species 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 white-throated grasswrens.
2. Improve habitat quality across the species range.

Important populations

All populations are of high conservation value.

Important habitat for the survival of the species

Bare flat plateaux and stepped or terraced hillsides along broad valleys, with or without narrow rocky gullies (Schodde & Mason, 1975; Noske, 1992), with vegetation comprising mature spinifex (*Triodia* spp.) and bare rock, bare pavement and/or boulders, sometimes with open shrubland or woodland overstorey.

Information required, research and monitoring priorities

1. Survey all sites where the species has been recorded and all other pockets of habitat, within the species range, that are known to have had few fires in the past two decades
2. Initiate regular monitoring at a selection of known sites
3. More precisely assess population size, distribution and trends
4. Examine the relationship between grasswrens and fire regimes
5. Examine fire histories of occupied and unoccupied habitats
6. Examine metapopulation structure
7. Investigate the impacts of feral cats on white-throated grasswrens

Management actions required

1. Work with park rangers in Kakadu National Park to investigate options for more intensive, fine-scale fire management that does not negatively impact grasswren habitat at key sites identified for the species.
2. If required, depending on the outcomes of priority seven, consider implementing 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 woodwardi

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

Threatened Species Scientific Committee

03/09/2014

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