

NSW Threatened Species Scientific Committee

Conservation Assessment of Thick billed Grasswren *Amytornis modestus inexpectatus* (Matthews, 1912) (Maluridae)

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NSW Threatened Species Scientific Committee

Thick-billed Grasswren *Amytornis modestus inexpectatus* (Matthews, 1912)

Distribution: endemic to NSW; [*Amytornis modestus* occurs in the Northern Territory, South Australia and NSW; 1 other subspecies in NSW].

Current EPBC Act Status: *Amytornis modestus* listed as Vulnerable (subspecies not listed)

Current NSW BC Act Status: *Amytornis modestus inexpectatus* listed as Critically Endangered

Proposed listing on NSW BC Act and EPBC Act: Extinct

Conservation Advice: Thick-billed Grasswren *Amytornis modestus inexpectatus* (Matthews, 1912)

Summary of Conservation Assessment

Amytornis modestus inexpectatus (Matthews, 1912) (Thick-billed Grasswren) found to be eligible for listing as extinct as at the time of this review there is no reasonable doubt that the last member of the species has died. Exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), and throughout its historical range have failed to record any individuals. Habitat change within the inferred range of this species has been substantial and remaining suitable habitat is uncommon and considered to be comprehensively surveyed.

Description and Taxonomy

Amytornis modestus (North, 1902) (Thick-billed Grasswren) is one of 11 presently recognised species within the purely continental Australian genus *Amytornis* (Black 2016). Until recently the species *A. textilis* was recognised across Australia, however since 2010 the eastern and western populations have been placed in *A.m modestus* (Thick-billed Grasswren) and *Amytornis textilis* (Western Grasswren), respectively (Christidis *et al.* 2010). A recent taxonomic assessment identified seven subspecies of *A. modestus* (Black 2011, 2016; Austin *et al.* 2013): five subspecies are extant - *A. m. cowarie* (South Australia [SA]), *A. m. curnamona* (SA); *A. m. indulkanna* (SA, Northern Territory [NT]); *A. m. obscurior* (NSW, far south Queensland [Qld]); and *A. m. raglessi* (SA). The remaining two subspecies *A. m. inexpectatus* (formerly from NSW) and *A. m. modestus* (formerly from NT) are considered to be extinct (Garnett *et al.* 2011; Black 2016).

Amytornis modestus inexpectatus (Matthews, 1912) was described as being from New South Wales (NSW) but the locality of the type material and its collector were not stated (Black *in litt.* Dec 2018). Circumstantial evidence suggests that the type material was one of Bennett's collections from the "Mossgiel District" (perhaps in the vicinity of Willandra Creek), although Matthews (1912) thought that the type specimens might have been from the Namoi River, Gould's collection locality, some 400 km to the northeast (A. Black *in litt.* Dec 2018). Recent reviews (e.g. Black *et al.* 2014; Black 2016) have accepted that the Namoi/Liverpool Plains and Mossgiel/Willandra populations are of the same subspecies, as implied by Matthews, although this has never been fully tested.

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Amytornis modestus (Thick-billed Grasswren) is characterised by cryptic plumage patterns with body colouration generally mid to pale brown above, paler below, with a moderately streaked appearance above, moderately to barely streaked below; tail varying from moderately long to short, slightly longer or of the same length in males; and a deep bill (Black 2011). *Amytornis m. inexpectatus* has the longest-tail in the species, a relatively slender bill and appears darker and more heavily streaked than most other subspecies (Black 2016).

Distribution and Abundance

Amytornis modestus inexpectatus is thought to have formerly occurred in central and western NSW, from the lower reaches of the Namoi River, south to Mossgiel, however the most recent record is 1886 (Garnett *et al.* 2011). *Amytornis* sub-species typically have narrow distributions (short range endemism) (Christidis *et al.* 2010). It is likely that the taxon was first collected by Charles Coxen, perhaps on the Liverpool Plains and shortly thereafter found by Gould to be abundant on the Lower Namoi (A. Black *in litt.* Dec 2018). Thomas Mitchell sent a specimen from an unknown locality to the British Museum in 1847 and another specimen was reported from “the northern districts” in 1855 (A. Black *in litt.* Dec 2018). Samuel White might have taken other specimens in 1868, also from an unknown locality (A. Black *in litt.* Dec 2018). In the late 1880s it was observed and collected in the “Mossgiel District” (presumably the country surrounding Willandra Creek) by K H Bennett (McAllan 1987; Black and Gower 2017) but there have been no subsequent reports from either area (A. Black *in litt.* Dec 2018).

Assessment of Survey Adequacy (reproduced from A. Black *in litt.* Dec 2018)

“The lack of any report of Thick-billed Grasswrens from this taxon’s historical range over a period now of 130-160 years is presumptive evidence of its extinction in the wild and it is unknown in captivity. The area of its former occurrence is not remote and is therefore readily accessible to birders. There is some certainty that many birders have attempted to find these grasswrens; indeed the isolated Striated Grasswren population near Bennett’s observations of the species in the “Mossgiel District” is well known and reasonably well documented. There have been two intensive Australia-wide bird surveys (1977-1981, Blakers *et al.* 1984; and 1998-2002, Barrett *et al.* 2003), during which the taxon was not reported. Similar Birdlife Australia surveys are ongoing across Australia and, in New South Wales, particular efforts (“thousands of observations”) have been undertaken to “rediscover” this bird by members of the NSW Bird Atlassers (I McAllan pers. comm.) without success... Targeted surveys of both areas over five days were undertaken during 2018, one observer in the north, three in the south with negative findings (S Debus pers. comm.).”

Ecology

Grasswrens are very specific in their habitat requirements and Thick-billed Grasswrens are almost entirely restricted to chenopod low shrublands, generally in depressions and drainage lines on stony plains (Black 2016). Habitats occupied by these long-extinct populations of *A. m. inexpectatus* have not been confidently determined but were probably chenopod or Nitrebush *Nitraria billardierei* shrublands or low shrublands (Black 2016). *Nitraria billardierei* is not particularly palatable to stock (Wilson 1992) and this species is considered to be a grazing resistant increaser shrub (Noble and Whalley 1978). However, in the areas where Nitrebush is increasing, the land is generally overgrazed and degraded and the density and structure of low vegetation has been demonstrated to be an important factor in predicting the presence of other subspecies of *A. modestus* (Black *et al.* 2011). Grazed areas have fewer arthropods (a food source), and nest predation and brood parasitism appear to be low, with rodents and snakes the most likely predators (Louter 2016).

Causes of extinction

As the species is considered extinct, there are no current threats. The cause of extinction has been attributed to destruction of habitat by livestock, feral herbivores, drought and wildfire (Schodde 1982; McAllan 1987; Garnett *et al.* 2011). Soon after 1886 (the time of the last sighting) the federation drought commenced which followed a decade of exceptionally high stocking rates in the region (McAllan 1987; Garnett *et al.* 2011), leading to reduced vegetation cover and damage to soils. Rabbits likely arrived on the Hay Plains around 1886 further increasing the grazing pressure (Cooper *et al.* 2016). In this period introduced predators, foxes (which likely arrived just after the federation drought) and cats, are likely to have had a negative impact (Reid and Fleming 1992; Catling and Coman 2008; Denny 2008). Chenopod shrublands (and other suitable habitats) have also been substantially modified by exotic and native herbivores, which have been present at higher densities (than would be otherwise possible) due to the installation of artificial watering points (James *et al.* 1999; Keith 2004). James *et al.* (1999 citing Curry and Hacker 1999; Reid and Fleming 1992; Smith and Smith 1994; Smith *et al.* 1994) include the Thick-billed Grasswren in the list of species negatively impacted by the provision of artificial watering points. The Thick-billed Grasswren is a poor flyer with limited dispersal capability and is highly susceptible to population fragmentation (Garnett & Crowley 2000; Higgins *et al.* 2001).

Assessment of extinction

Amytornis modestus inexpectatus is considered extinct (Garnett *et al.* 2011; Black *et al.* 2011; CTSSC 2014; Black *et al.* 2013; Austin *et al.* 2013; Black *et al.* 2014; Black 2016; Slender *et al.* 2017; D Watson *in litt.* Dec 2018; A Black *in litt.* Dec 2018; del Hoyo *et al.* 2019). There has been a lack of records over a long (>130 years) period of time, adequate targeted survey within suitable habitat has occurred and there has been substantial loss of habitat. Grasswrens are a cryptic group of species, for example *Amytornis modestus obscurior* remained undetected for over 70 years before it was rediscovered (Parker *et al.* 2010). The difficulty in detecting *Amytornis modestus inexpectatus* has been considered in assessing the likelihood of extinction.

A. Black (*in litt.* Dec 2018) provided the following information about the status of this species:

1. "The habitat of Gould's Namoi locality is almost completely cleared and given over to cropping. In Bennett's "Mossgiel" area clearance is less complete but continuous grazing has resulted in considerable modification. Yet there remains some potential habitat, including chenopods and Nitrebush and the possible continued presence in the latter area could not be entirely eliminated in the absence of a targeted survey.
2. Grasswrens are characteristically difficult to detect and so presumption of absence requires a considerable body of negative evidence. [It took over 70 years for confirmation of the survival of *Amytornis modestus obscurior* in north-western NSW, although in a much more remote region and with additional uncorroborated reports.] I doubt that access or seasonal factors could be held responsible for the failure to find any evidence for the continuing survival of a population of *Amytornis modestus inexpectatus*. If any of that subspecies had survived, I believe it likely that it would have been reported by now, given the number of general and targeted searches that have been undertaken in its former area of occurrence.
3. In conclusion, I believe that it is likely that *Amytornis modestus inexpectatus* is extinct."

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Assessment against IUCN Red List criteria

For this assessment it is considered that the survey for *Amytornis modestus inexpectatus* has been adequate and there is sufficient scientific evidence to support the listing outcome.

Criterion A Population Size reduction

Assessment Outcome: Not applicable

Justification: As the species is assumed to be extinct there is no population change.

Criterion B Geographic range

Assessment Outcome: Extinct

Justification: As the species is assumed to be extinct, the geographic range is zero.

In addition to these thresholds, at least two of three other conditions must be met. These conditions are:

- a) The population or habitat is observed or inferred to be severely fragmented or there is 1 (CR), ≤ 5 (EN) or ≤ 10 (VU) locations.

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

- 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

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

- c) Extreme fluctuations.

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

Criterion C Small population size and decline

Assessment Outcome: Extinct

Justification: The species is assumed to be extinct

At least one of two additional conditions must be met. These are:

- C1. An observed, estimated or projected continuing decline of at least: 25% in 3 years or 1 generations (whichever is longer) (CE); 20% in 5 years or 2 generations (whichever is longer) (EN); or 10% in 10 years or 3 generations (whichever is longer) (VU).

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

- C2. An observed, estimated, projected or inferred continuing decline in number of mature individuals.

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Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

In addition, at least 1 of the following 3 conditions:

- a (i). Number of mature individuals in each subpopulation ≤ 50 (CR); ≤ 250 (EN) or ≤ 1000 (VU).

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

- a (ii). % of mature individuals in one subpopulation is 90-100% (CR); 95-100% (EN) or 100% (VU)

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

- b. Extreme fluctuations in the number of mature individuals

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

Criterion D Very small or restricted population

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

To be listed as Vulnerable under D, a species must meet at least one of the two following conditions:

- D1. Population size estimated to number fewer than 1,000 mature individuals

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

- D2. Restricted area of occupancy (typically $< 20 \text{ km}^2$) or number of locations (typically < 5) with a plausible future threat that could drive the taxon to CR or EX in a very short time.

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

Criterion E Quantitative Analysis

Assessment Outcome: Not applicable

Justification: The species is assumed to be extinct

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Conservation and Management Actions

There are no conservation actions. By listing a species as extinct the NSW Threatened Species Scientific Committee has determined that there are no populations remaining and therefore no management actions are required.

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