

## Short-tailed Grasswren (*Amytornis merrotsyi merrotsyi*) survey – Vulkathunha-Gammon Ranges National Park

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**Figure 1:** Short-tailed Grasswren (*Amytornis merrotsyi merrotsyi*). Adult male from survey site Vulk-01, 1<sup>st</sup> June 2022. Photo Sam Gordon.

Summary of a survey conducted by ecologists Ashwin Rudder and Sam Gordon for South Australian Arid Lands (SAAL) Landscape Board.

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## Introduction<sup>1</sup>

The Australian Government's National Landcare Program has supported a five-year project proposal 'Bounceback and Beyond' from the South Australian Arid Lands Landscape Board (SAAL). This project operates in collaboration with the Bounceback program to deliver pest species management through ground and aerial baiting, culling, and assessing herbivore impact (on and off park).

Short-tailed Grasswrens (*Amytornis merrotsyi*) 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.

There are two subspecies of Short-tailed Grasswrens (STGW), one in the Flinders Ranges (*A. m. merrotsyi*) and one in the Gawler Ranges (*A. m. pedleri*). Short-tailed Grasswrens are distributed across the Flinders Ranges in scattered and disjunct sites between Mt. Neil in the north and Nelshaby in the south. *A. m. merrotsyi* have been reported occurring 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 Ikara-Flinders Ranges National Park; between Black Range and Belton; in the Gammon Ranges and north of Arkaroola.

The largest population of this subspecies inhabits the south-east corner of Ikara-Flinders Ranges National Park (IFRNP). Studies suggest that this population may have increased following extensive and intensive habitat management, including fox baiting and reduction of native herbivore species through ground and aerial baiting, culling, and assessing herbivore impact (on and off park).

Excessive frequencies of fires, both natural and human mediated, along with grazing, have been identified as the most immediate threats to Short-tailed Grasswren. 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*). 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. The subspecies is listed as Vulnerable under the EPBC Act 2001.

No targeted surveys have been undertaken in the Flinders Ranges since 2003, though some of the 2003 IFRNP survey sites were revisited in 2018. The purpose of this survey is to assist South Australian Arid Lands (SAAL) in establishing a baseline population status and valuable sites for the Flinders Ranges STGW within Vulkathunha-Gammon Ranges National Park (VGRNP). This assessment will provide information to SAAL for the next round of management actions and provides a baseline for future visits to monitor population trajectories. With the translocation of idnya (*Dasyurus geoffroii*) in 2022 to VGRNP it is important to determine the status of STGW as early as possible so that any potential impacts of this predator can be monitored.

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<sup>1</sup> Adapted from *Specifications for Services* provided by South Australian Arid Lands Landscape Board 2022.

## Methods

Five large survey sites were provided by SAAL, to be surveyed across five days in the first week of June 2022. Each site encompassed an area thought to contain extensive *Triodia*, while also being situated close to release locations of idnya; the fifth site, on the boundary of VGRNP and Arkaroola Wilderness Sanctuary (AWS) had been previously surveyed and was revisited during this survey.

Sites were surveyed on foot by two observers. Hilltops and ridgelines provided vantage points from which to identify areas of *Triodia* to target, and discretion to move beyond the boundaries of the SAAL-provided site polygons into suitable habitat was granted. Roughly 6-8 hours was spent traversing each site – due to the survey requirements outlined below, the steep nature of the terrain, and often loose surface underfoot, moving speed was restricted to approximately one kilometre per hour. Walking routes were recorded and are provided in the attached .kml file.

### Grasswren detection

Grasswrens were surveyed for using a ‘random meander’ method, following Carpenter’s methods (2004). Focusing on areas of healthy and/or extensive *Triodia*, grasswrens could be detected by a range of potential methods:

- hearing contact calls or song;
- flushing birds from cover while walking through the habitat;
- observing birds “hopping” along the ground between *Triodia* clumps;
- stopping at random locations along the walk and making high pitched “whistles” in an attempt to either lure birds to the observer or encourage any hidden birds to call in response;
- using a speaker to play calls and song of STGW to achieve the same result as above.

In suitable habitat, the two observers spaced themselves to allow the area to be searched more efficiently. Playback was played anywhere the observers deemed potential habitat, generally at 50-100 metre intervals; playback locations were also recorded in the attached .kml file.

### Vegetation transects

200 metres of vegetation surveys were also conducted in each site, across four 50 metre transects. Survey methods followed Carpenter (2004), and involved laying a 50 m tape through suitable habitat and recording substrate or vegetation cover at 50 cm intervals (Figure 2).

At each 50 cm interval, a measuring pole was held vertically, and the species of vegetation in contact with the pole recorded at its height of intersection. Note that *Triodia* height was recorded at the intersecting tussock height, not intersecting inflorescence height (if present). If no vegetation cover was present, the substrate was recorded. Substrate categories were as follows:

- Bare;



- Rock (diameter greater than 2 cm);
- Litter;
- Other as appropriate (e.g. coarse woody debris).

Vegetation was identified to species level where possible, and otherwise to genus level. It was subsequently categorised by growth form, according to the following categories:

- Hummock grass
- Tussock grass
- Forb
- Chenopod
- Low shrub (plants growing low to the ground that cannot be perched in)
- Woody shrub (shrubs that grasswrens could utilise to perch in)
- Tree



**Figure 2:** Transect Vulk-02-02. Significant dieback of trees and *Triodia* during the recent severe drought contrasts with young *Triodia* hummocks and rapid regrowth following good conditions in the first half of 2022.



Where the extent of suitable habitat permitted, each transect was laid at least 500 m from the next nearest transect – this was not always possible due to the limited distribution of *Triodia* in some sites. Furthermore, vegetation transects were placed wherever grasswrens were detected. Such transects started from where a grasswren was first detected, and were laid in the direction that the grasswren travelled. Where time permitted, a second transect per grasswren sighting was measured, extending beyond the end of the initial transect.

Additional metadata at each transect was also recorded. Evidence of grazing based on the utilisation state of the three dominant species along each transect was scored based on a scale provided by SAAL. Wind was scored on a scale according to its effect on detectability of grasswrens. Refer to the attached Microsoft Excel spreadsheet for full array of metadata fields.

## Results

### General conditions

Conditions in the Gammon Ranges are currently excellent, following good summer rainfall and follow up rain through the first half of 2022. No evidence of grazing was apparent, owing to the sheer quantity of vegetation cover. Nonetheless, evidence of significant recent drought conditions were ever-present: the majority of trees were dead, or resprouting epicormically, and almost all *Triodia* over more than ~12 months age also dead (Figure 2, 3). *Triodia* was observed seeding on only one occasion in VGRNP, at Vulk-02. 53 species of bird were recorded in the five days within the bounds of the national park, with several additional species recorded on Arkaroola, immediately to the north.



**Figure 3:** Largely dead *Triodia* and overstorey near Vulk-01-01.

### Grasswren presence on VGRNP

Grasswrens were detected at only one survey site (site Vulk-01) on Vulkathunha-Gammon Ranges NP. Three birds were found following contact call response to playback at -30.40214, 139.21730. These birds responded well to playback, with an adult male in particular proceeding to sing for extended periods (upwards of one minute) following brief follow-up bursts of playback. The habitat here consisted primarily of dead old *Triodia* and healthy young *Triodia* on a rocky slope, either side of a gully dominated by mostly dead *Melaleuca uncinata* shrubs. A greater proportion of mature *Triodia* had survived the drought at this location than the average elsewhere (Figure 4).



**Figure 4:** Vulk-01-02, where three STGW were detected responding to playback. The birds retreated to a drainage line to the right of this image.

Adjacent to the next drainage line to the south, at least three – but probably four – birds were subsequently detected by contact call response to playback, at -30.40426, 139.21556. These grasswrens were far less responsive to playback, with no approaches made by birds, no singing, and only very brief glimpses of one bird. Habitat here was similar to the previous site, although there was some persistent alive old growth *Triodia* present.

Grasswrens were not detected anywhere else within site Vulk-01, or at any of the other four survey sites. It should be noted that Vulk-03 contained no *Triodia*, and does not appear to have contained any in recent history. *Triodia* cover was found more extensively in Vulk-01 and the north-western cell of Arka-05 than in any other site (Figure 5), and it is the view of the surveyors that these areas hold the greatest potential for further records of grasswrens; *Triodia* extended well to the south of Vulk-01 but couldn't be surveyed due to time/distance constraints.





**Figure 5:** Extensive, but predominately dead, *Triodia* at site Arka-05.

The two locations where STGW were located featured a higher density of *Triodia*, and of woody shrubs, than the average of transects in areas where grasswrens were not detected (Table 1). *Triodia* was slightly taller in the two places that grasswrens were present than across areas where grasswrens were not detected (Table 2). Note that such data are averages and have not been subjected to statistical analysis.

**Table 1:** Average cover at survey sites. At sites with grasswrens present where two transects were surveyed, data are combined and halved to allow for averaging against sites with grasswrens present that had only one transect surveyed. Mixed vegetative ground cover is a cumulative cover score of forbs, tussock grass, chenopods, and low-growing shrubs. Numbers are per cent cover, rounded to one decimal place, and may sum to above 100% due to the potential for multiple cover types at each transect point.

Cover	STGW detected	STGW not detected
Live <i>Triodia</i>	12.4	6.9
Dead <i>Triodia</i>	27.3	20.6
<i>Triodia</i> (total)	39.7	27.6
Bare	4.5	7.9
Rock	19.9	31.0
Litter	11.2	12.6
Mixed vegetative ground cover	19.1	17.4
Woody shrub cover	17.9	3.4
Tree cover	0.5	4.7

**Table 2:** Average height of *Triodia*. At sites with grasswrens present where two transects were surveyed, data are combined and halved to allow for averaging against sites with grasswrens present that had only one transect surveyed. Numbers are height in centimetres.

	STGW detected	STGW not detected
Live <i>Triodia</i>	19.6	17.7
Dead <i>Triodia</i>	20.9	16.3
<i>Triodia</i> (total)	20.5	16.7

### Grasswren presence on Arkaroola Wilderness Sanctuary

At the request of the owners of AWS, Doug and Vicki Sprigg, we made use of time set aside for bad weather to spend two half days surveying for grasswrens in suitable habitat on Arkaroola. These surveys didn't adhere to the methods described above, and involved no vegetation transects. The afternoon of June 5<sup>th</sup> was spent searching in very high winds (upward of 40km/h) near the western boundary of the sanctuary, broadly adjacent to the disused Wheal Turner mine. Despite high winds, two pairs of grasswrens were detected, at -30.21572, 139.23324 and -30.22224, 139.22731 respectively (the latter just within the boundary of VGRNP; Figure 6). In both instances, birds were detected in drainage lines surrounded by *Triodia* and containing a handful of low shrubs.



**Figure 6:** A shallow drainage line inhabited by a pair of STGW. Note the presence of a shrubby overstorey.

The morning of June 6<sup>th</sup> was spent along the final 7 km of the Ridgetop Track of Arkaroola, where *Triodia* cover is extensive and more or less continuous. Like VGRNP, almost all the mature *Triodia* had died during the recent severe drought; however, one small patch (4-9 ha) persisted in robust health (Figure 8). Along the Ridgetop Track, grasswrens were



detected on five separate occasions (totalling at least 11 birds; see the attached spreadsheet for coordinates; Figure 7). Until these sightings, all previous birds had been first detected when calling in response to playback; three of the five sightings on this morning stemmed from birds making contact calls unprompted. In all bar one instance, birds were detected adjacent to or in shallow drainage lines containing shrub cover; one pair was detected at the top of a slope where *Triodia* was interspersed with dense *Sida petrophila*.



**Figure 7:** One of a party of four STGW found just below Sillers Lookout on the Ridgetop Track on Arkaroola Wilderness Sanctuary. These birds were heard from the moving vehicle. Photo by Sam Gordon.

It is difficult to draw conclusions pertaining to the greater detection of STGW on AWS than VGRNP. Nonetheless, it is the qualitative view of the surveyors that the more extensive and continuous *Triodia* cover at Arkaroola provides better habitat and refuge options to birds, potentially allowing them to better persist during dry spells. In almost all instances, STGW were detected along shrubby drainage lines, as opposed to *Triodia*-exclusive areas. It may be that the cover or habitat value of the shrubby overstorey offered a refuge during the drought; STGW has been known to utilise *Triodia*-exclusive habitat elsewhere within its range in the past.

### Other notable records

Painted Finches (*Emblema pictum*) were detected at several locations throughout VGRNP and Arkaroola. Most notably, a group of nine birds, including immatures, was seen foraging among *Triodia* on a ridgeline high above Italowie Creek. Additional potential heard-only records of the species went unverified. For further details, see the attached spreadsheet.

Two Yellow-footed Rock Wallabies (*Petrogale xanthopus*) were seen in a narrow, *Melaleuca* dominated creekline tributary of Italowie Creek. Other individuals were seen on Arkaroola, but the location of these animals was not noted.

Evidence of goats was low throughout VGRNP and absent from Arkaroola. We recorded one sighting of a small flock of 10 goats at -30.43034, 139.18460, and heard a goat at -30.53298,

139.14905. While some old scats were seen in a handful of places, fresh scats and tracks were only found at: -30.40619, 139.22437; and -30.52203, 139.15403.

## References

Carpenter, G. (2004). *Population trends in Short-tailed Grasswrens Amytornis merrotsyi in the central Flinders Ranges, South Australia*. Report for Nature Foundation of South Australia.



**Figure 8:** Healthy mature *Triodia* on the Ridgetop Track at Arkaroola Wilderness Sanctuary. This patch of healthy *Triodia* extended over an area of perhaps 4-9 hectares at most, and was surrounded by more “typical” dead *Triodia*. At least six STGW were detected in the 600 m southwest of this photo, in both healthy and dead spinifex, where shrubs and/or *Sida petrophila* provided additional habitat complexity.