Australian Field Ornithology 2017, **34**, 131–136
http://dx.doi.org/10.20938/afo34131136

The first records of the Eyrean Grasswren *Amytornis goyderi* from New South Wales

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Abstract. This paper describes the first known records of the Eyrean Grasswren *Amytornis goyderi* from New South Wales (NSW). These observations were made on 3 April 2016 just inside the border adjacent to South Australia and were clearly on the margins of the species' range. The habitats noted at the time of the observations were of plant species found throughout the Strzelecki Desert, but did not include Sandhill Canegrass *Zygochloa paradoxa* (often quoted as a key habitat for the species), which was absent from the immediate vicinity. It is suggested that the low numbers of Eyrean Grasswrens in the Strzelecki Desert in NSW might be a consequence of overgrazing by livestock and Red Kangaroos *Osphranter rufus*, the latter influenced by the culling of Dingoes *Canis dingo*, as well as the increased predation on smaller birds and mammals by Red Foxes *Vulpes vulpes*.

Introduction

The Eyrean Grasswren *Amytornis goyderi* was discovered in 1874 in north-eastern South Australia (SA) on the Lewis Expedition to Lake Eyre (Gould 1875). It remained known only from these initial specimens until September 1961, when it was rediscovered close to one of the original collecting localities at Christmas Waterhole on the Macumba River at the south-western extremity of the Simpson Desert (Morgan *et al.* 1961).

Later exploration of the Lake Eyre Basin revealed that the Eyrean Grasswren was widespread in the Simpson Desert in SA, Queensland and the Northern Territory (NT) and the Strzelecki Desert in SA (May 1977; Parker *et al.* 1978; Parker 1980; Schodde 1982; Blakers *et al.* 1984; Cole & Gibson 1987; Rowley & Russell 1997; Barrett *et al.* 2003). The farthest south that the species has been recorded in the literature was by Ian May on 2 March 1982 at a locality 30 km east of Lake Callabonna at or near Yandama Creek (near 29°55′S, 140°27′E) ~45 km west of the New South Wales (NSW) border (Carpenter *et al.* 2003). However, May also recorded Eyrean Grasswrens in September 2001 on a track that then ran from Lake Cootabarlow (30°12′S, 140°11′E) east to the NSW border (I. May pers. comm. to IMcA 23 March 2017; see also May 2001a). Through the course of working in this area, May considers that this species is easily located south of the Merty Merty–Cameron Corner Road and south to near Lake Cootabarlow, recording Eyrean Grasswrens as close as 100 m west of the NSW border (I. May pers. comm. to IMcA 23 March 2017; Figures 1–2).

There is no definite record yet of the Eyrean Grasswren from the Strzelecki Desert in Queensland. It was questioned whether two unregistered specimens of the Striated Grasswren *A. striatus* in Museum Victoria that were collected by Hans Beste and Judy Beste on 17 July 1971 at Santos Homestead, near 28°35′S, 141°31′E (Ford & Parker 1974), could have been Eyrean Grasswrens (Schodde 1982). However, Ford & Parker (1974) did not dispute the identity of the specimens, and Striated Grasswrens were also recorded near Epsilon Homestead (28°10′S, 141°08′E) on 22 July 1966 (Higgins *et al.* 2001; Chapman 2006). There is an unverified report of the Eyrean Grasswren from this part of Queensland: the website eBird has a record from the 10-minute grid centred on 28°55′S, 141°55′E, immediately to the north-east of Cameron Corner for 15 October 1994 (see http://ebird.org/ebird/australia/view/checklist/S16648866; retrieved 19 February 2017). This record was submitted by an unknown person from Birds Queensland but, from the website's listing, the bird's identity and locality cannot be confirmed.

This note details records of the Eyrean Grasswren from the Strzelecki Desert in NSW from April 2016, extending the species' range to the east and south-east. The reasons for the species' rarity in NSW are also explored.

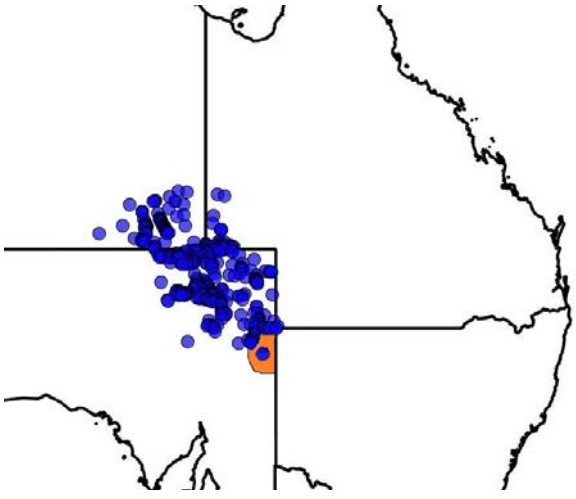

Figure 1. Map of records of Eyrean Grasswren (blue dots), largely based on records in Atlas of Living Australia. The orange section in South Australia adjacent to the New South Wales border is the area where Ian May has found the species common and widespread.

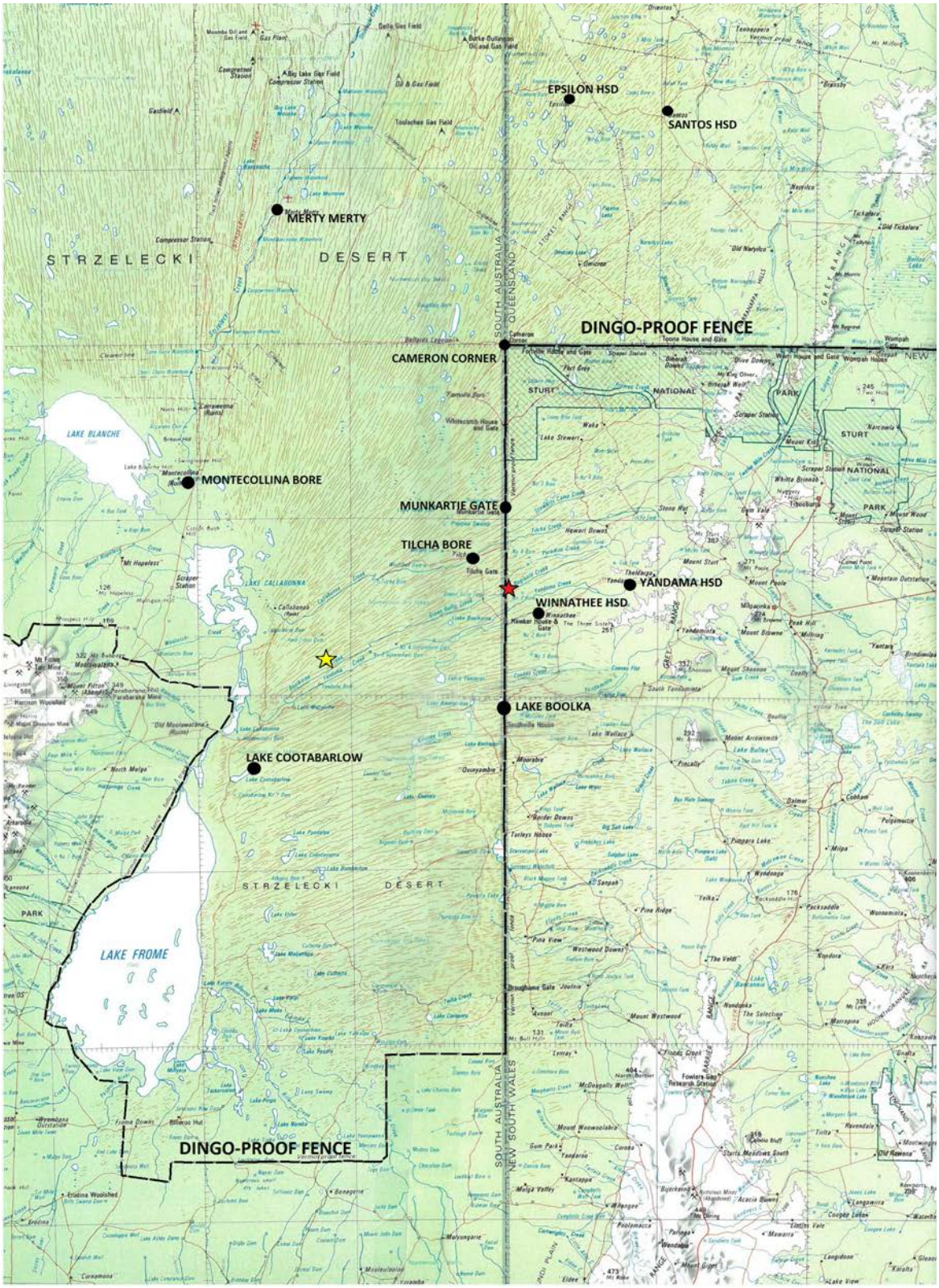

Figure 2. North-eastern South Australia, south-western Queensland and north-western New South Wales showing places mentioned in the text. The dashed line is the Dingo-proof fence. The red star is the area of the records near the NSW border, the yellow star is the site of Ian May's record from 1982. HSD = Homestead.

Methods

A group of members of the NSW Bird Atlassers (DC & Barbara Cooper, Kay & Bruce Gilchrist, PK, DM, IMcA, MM, Donna Moody, and Bob West) visited north-western NSW partly to look for this species in March and April 2016. The area targeted was close to known locations of Sandhill Canegrass *Zygochloa paradoxa*, identified from locations reported in the Atlas of Living Australia website www.ala.org.au (Atlas of Living Australia 2016). However, once we were in the area it was apparent that these locations were all old, vague, and the coordinates given were almost entirely in non-sandhill habitat and so were inaccurate—for example, there is a record from 1963 placed at 5 km west

Figure 3. A female Eyrean Grasswren in South Australia photographed from New South Wales. Photo: Ian McAllan

Figure 4. Eyrean Grasswren photographed in New South Wales. Photo: Pam Kenway

Figure 5. Habitat where the Eyrean Grasswren was first seen (looking through the fence into South Australia). The bird was first seen in the dead Sandhill Wattle to the left, and then moved to the live Sandhill Wattle to the right, before moving back to the dead bush. Photo: Ian McAllan

Figure 6. Site of the sighting of the second pair of Eyrean Grasswrens in New South Wales (site photographed 2 days later). Photo: Ian McAllan

of Yandama Homestead at 29°39′S, 141°22′E, currently in gibber-plain country. It was decided to look more generally in the sandhill country at Winnathee Station (Homestead at 29°45′S, 141°07′E) and to survey for Eyrean Grasswrens along station tracks and the main public access track beside the fence on the NSW–SA border. This fence was originally built to keep Rabbits *Oryctolagus cuniculus* from moving into Queensland and SA, but was later converted to keep wild dogs, particularly Dingoes *Canis dingo*, out of the south-east of Australia to reduce the predation on Sheep *Ovis aries*. We travelled along the fence at this part of the border as far north as Munkartie Gate (29°28′S, 141°00′E) and south to Lake Boolka (30°02′S, 141°00’E) and visited station tracks within a 10-km radius of Winnathee Homestead.

While travelling along the border fence, records were made of the height of the sand-dunes and the depth of the swales using GPS, and general notes were made on the habitat observed.

Results

General observations

On the morning of 3 April 2016, our group was travelling along the border between NSW and SA, stopping regularly to look at birds. At a point 10.6 km north of Hawker Gate, at 29°41′05″S, 141°00′E, we stopped on the crest of a dune. Few birds were seen initially and, at 1040 h, IMcA and Bob West were taking photographs along the fence when the reeling song of an Eyrean Grasswren was heard through the fence in SA. Two Eyrean Grasswrens were seen 15 m away in a dead Sandhill Wattle *Acacia ligulata*, with Ruby Saltbush *Enchylaena tomentosa* at its base. The other observers were called over. The birds moved back into a live Sandhill Wattle nearby out of view for 1–2 minutes and then returned to the dead wattle where they were seen by all observers (Figure 3).

After a few minutes, the Eyrean Grasswrens moved closer to the fence. Playback of the Eyrean Grasswren call from the Michael Morcombe Bird App via an iPhone

was then undertaken. At this point, the birds moved to the fence, perched briefly ~0.5 m above the ground, and then hopped into NSW towards MM, who was holding the iPhone and standing ~20 m into NSW. The birds came within a few metres of him but then kept moving eastwards. We followed for some minutes, watching and photographing the birds as they moved between live and dead wattles (Figure 4). The birds finally moved out of sight after they had travelled >100 m into NSW. They were observed for approximately ~30 min.

The habitat at the site was red sandhills dominated by Sandhill Wattle, both live and dead bushes, often with associated Ruby Saltbush at the bases (see Figure 5). Also present were scattered small shrubs of Loose-flowered Rattlepod *Crotalaria eremaea*, Crimson Turkey-Bush *Eremophila latrobei*, and dead Roly Poly *Salsola australis*, and the herb Large Pigweed *Portulacca intraterranea* and grasses (largely Kerosene Grass *Aristida contorta*). The sandhills were some of the highest along the border. They were some of the few with Rattlepod present but lacked Broad-leaved Hopbush *Dodonaea viscosa angustissima*, which was found, and sometimes dominant, on many of the other dunes over the next 10 km immediately to the north in NSW.

Later that afternoon, from 1500 to 1520 h, MM & Donna Moody and DC & Barbara Cooper observed another pair of Eyrean Grasswrens ~3 km to the south of the previous record and 200–300 m east into NSW near 29°42′42″S, 141°00′07″E. These birds were again located initially in dead Sandhill Wattles with Ruby Saltbushes and bluebushes *Maireana* sp. at their bases. The birds were observed for *c.* 20 minutes and travelled another 75–100 m east before disappearing. Playback was not used during these observations. This dune was again dominated by Sandhill Wattle (Figure 6). There was also Rattlepod present and many of the plant species found at the original site.

The ridge at the site of the first observations was 121 m above sea-level (asl), with the swale to the north at 110 m asl. This was the highest dune in terms of both altitude and amplitude between Tilcha Creek at 29°34′S (103 m asl) and Hawker Gate near Yandama Creek at 29°47′S (110 m asl). At the second locality where the birds were seen, the dune height was 118 m asl, with the swale at 113 m asl.

Two Eyrean Grasswrens were present at both sightings and, given the distance apart, these were undoubtedly different pairs. Good views were had of all parts of the birds, which from their plumage colour appeared to be adults (see Rowley & Russell 1997; Higgins *et al.* 2001). The birds were ~15 cm in length. They were clearly grasswrens and for the most part travelled hopping on two legs with the tail held upright. Each had a white chin, throat and breast, and reddish-fawn wings, back, tail, crown and flanks (Figures 3–4). The face and ear-coverts were black with white streaking. White streaking was also prominent on the head, back, wing-coverts and secondaries (Figure 4). The birds had dark eyes and dark-grey legs and bill. The bill was stout and thick and was a prominent feature of the birds. The only calls heard were the singing reel at the initial sighting. Both sets of records were submitted to the NSW Ornithological Records Appraisal Committee (Case 654) and were accepted unanimously by the Committee.

Discussion

As early as 1982, it was suggested that the Eyrean Grasswren might eventually be found in NSW (Schodde 1982). Until recently, however, the nearest documented observation to NSW of which we are aware was a sighting 10 km west of Cameron Corner (near 28°59′50″S, 140°53′E) made by Rohan Clarke in April 2000 (Clarke 2000), though May's unpublished records were clearly closer. More recently, on 4 November 2010, IMcA recorded a party of at least three Eyrean Grasswrens ~24.5 km west of Cameron Corner (near 28°59′50″S, 140°45′E). Examination was made of the dunes to the east of there at that time by IMcA, DM and Ted Nixon. It was thought that the Sandhill Canegrass habitat declined significantly towards Cameron Corner, so it was unlikely that this species would be found at Cameron Corner itself and the adjacent parts of NSW. DC & Barbara Cooper have also visited the area adjacent to Cameron Corner in NSW on several occasions. In September 2001, they spent almost a week there on a NSW Bird Atlassers trip, surveying much of the country within 20 km of Cameron Corner in NSW for birds. At the time it was considered that the habitats present were unsuitable for all grasswren species.

Sandhill Canegrass, typical of habitat in the Strzelecki Desert in SA, was absent from the site on Winnathee Station and was not seen nearby. Nevertheless, the habitat in NSW did not appear greatly different from what was visible in SA, though shrub density was greater on the NSW side of the fence. It is therefore likely that the Eyrean Grasswren regularly occurs in at least this part of NSW near the border with SA.

The Sandhill Canegrass site nearest to our sightings of which we are aware was indicated by the local landholder (Kent Hotchin) and was 7.5 km farther east, at 29°41′32″S, 141°04′37″E. We visited this locality on 4 April 2016, but found that it was only 20 m x 100 m in extent and, not surprisingly, there were no grasswrens present (IMcA, PK, MM & DM pers. obs.). We have also visited an area of several hectares of Sandhill Canegrass farther south on the main north–south track at Corrinninne Tank on Border Downs Station (30°17′30″S, 141°02′30″E) on several occasions since 1987 (as has Ian May in August 2012: pers. comm. to IMcA). Although thoroughly examined, no grasswrens have been seen at this location, presumably as it is grazed heavily, being near the tank.

Although unusual, the absence of Sandhill Canegrass at an Eyrean Grasswren site has previously been recorded. In 1977, Ian May and R. Lovell saw a family party of this species 8 km east-north-east of Purni Bore in north-eastern SA close to the NT border (May 1977). This locality was in a flat between two dunes and dominated by Lobed Spinifex *Triodia basedowii*, Sandhill Wattle and Thorny Saltbush *Rhagodia spinescens*. Similarly, Black *et al.* (2011) reported that in 2007 Eyrean Grasswrens were seen on the Strzelecki Track in SA near Montecollina Bore and the nearby Moppa Collina Channel and 2 km to the south of there in Nitrebush *Nitraria billardierei* and Thorny Saltbush on sandy clay hummocks, in samphire in the channel with Sandhill Saltbush *Atriplex velutinella* and Buckbush *Salsola australis* on the adjacent bank, and in Old Man Saltbush *Atriplex nummularia* on a flood-out. May's record was unusual enough to be noted in reviews of the species (e.g. Higgins *et al.* 2001), but we suspect

such records are not rare, just rarely reported.

It might be significant that Ian May's sighting at Yandama Creek in SA was ~60–65 km west-south-west of the sightings in NSW and on the same dune system. These dunes are vegetated and have probably been in much the same position and orientation for thousands of years. Consequently, Eyrean Grasswrens are probably found along the full length of these dunes. The height of the dunes could also be significant in the habitat selection by the Grasswrens, as they were not recorded along the Border Fence on the lower-elevation dunes closest to the major creek systems at Tilcha and Yandama Creeks. Nevertheless, Ian May found Eyrean Grasswrens common at Tilcha Bore on 'Callabonna' Creek [= Tilcha Creek], SA (near 29°36′S, 140°53′E) in September 2001 ~10 km west of the NSW–SA border (May 2001a).

Few birdwatchers visit this part of NSW. The only previous documented visits of which we are aware were by a group of NSW Bird Atlassers on 18–19 March 1987 (IMcA, DC & DM included), and visits by Ian May in September 2001 (May 2001a,b) and again in August 2012 (I. May pers. comm. to IMcA 23 March 2017). Nevertheless, given that there was more than one sighting of the Eyrean Grasswrens during the 2016 visit, it is likely that the species could be found regularly in the area, particularly in seasons when there are fewer grazing mammals or in wetter years where there is more growth of vegetation. Indeed, in 2015, rainfall was above average in north-eastern SA and north-western NSW (Bureau of Meteorology 2016), and so sighting these birds might have been more likely.

It is possible that the lack of previous records in NSW might be a consequence of the Dingo-proof fence itself. On the SA side of the fence, there are wild Dogs, and usually Dingoes present, whereas on the NSW side of the fence Dingo numbers are controlled. In SA, there are fewer Red Kangaroos *Osphranter rufus* in comparison with the large numbers on the NSW side (noted by us in April 2016, as well as by I. May in 2001: see May 2001b). This has also been noted in numerous studies of Dingo–prey interactions along the Dingo-proof fence (e.g. Caughley *et al.* 1980; Pople *et al*. 2000; Newsome *et al.* 2001; Letnic *et al.* 2009, 2012; Letnic & Koch 2010). The presence of the fence and long-term systematic culling of Dingoes on the NSW side has meant that the grazing of stock, particularly Sheep, is more financially viable, and so stock numbers have been maintained at higher levels by graziers. Selective grazing has probably removed elements of the landscape suitable for the Grasswrens, most noticeably, the Sandhill Canegrass. Such selective grazing in the absence of Dingo predation has been noted to reduce grass density and abundance and increase that of woody weeds such as Broad-leaved Hopbush (Gordon *et al.* 2017a; Rees *et al.* 2017). The dominance of Hopbush in areas in NSW along the fence north of the initial sighting also suggests past overgrazing locally.

Another aspect of this control of Dingoes is the possibility of increased numbers of other predators through the operation of 'Mesopredator Release'. The Mesopredator Release Hypothesis has been used as an explanation for the decline of small prey species following the loss of top predators in an ecosystem (Soulé *et al.* 1988; Ritchie & Johnson 2009). In the present case, the top predator is currently the Dingo, with the predator immediately below this in size being the Red Fox *Vulpes vulpes*, followed by the Cat *Felis catus*. Although there have been no significant differences in the number of Cats found on either side of the fence (e.g. Letnic *et al.* 2009; Letnic & Koch 2010), a reduced number of Foxes in the presence of Dingoes is real (Newsome *et al.* 2001; Letnic *et al.* 2009, 2012). Dingoes prefer prey larger than Foxes (Johnson *et al.* 2007; Letnic *et al.* 2009), and it is highly likely that the lower number of Foxes in the presence of Dingoes is caused by direct killing and interspecific competition for food and shelter (Letnic *et al.* 2012).

It has also been noted that in the presence of Dingoes there is a greater number of small mammals and ground-nesting birds such as the Little Button-quail *Turnix velox*, particularly in drier seasons and years, and this has been considered evidence of mesopredator release (Letnic *et al.* 2009; Letnic & Koch 2010; Gordon *et al.* 2017b). However, the presence of the Dingo-proof fence might have allowed a higher level of grazing by Sheep, Red Kangaroos and Goats *Capra hircus* on the NSW side, reducing the amount of cover and seed there and so forcing the Little Button-quail to leave in drier years.

In any case, the effects of Foxes might affect more guilds than these. Although the Fox is usually thought of as feeding almost exclusively on terrestrial prey (e.g. Saunders *et al.* 2010), it has been recorded climbing trees where it can gain purchase to a height of at least 1.4 m in eastern Australia (Mella *et al.* 2017) and up to 8 m in Canada (Sklepkovych 1994). Red Foxes clearly can take prey from most vegetation <2 m in height, even without climbing, and as most vegetation in the arid zone is within this height range, most birds nesting in this area could be affected. It is possible that Foxes are at least partly responsible for the virtual absence of Eyrean Grasswrens from the NSW part of the Strzelecki Desert.

It has been suggested that moving the Dingo-proof fence farther to the south and east will benefit small mammal species, specifically moving it to south of the Sturt National Park (Newsome *et al.* 2015). The evidence of the distribution and abundance of the Eyrean Grasswren in the Strzelecki Desert is that such a change might help small birds as well. In any case, it might be that with greater control of Red Kangaroos and fewer Sheep the Eyrean Grasswren could be found in much of the sandhill country of the Strzelecki Desert in NSW.

The Dingo-proof fence trends generally westwards from the NSW border at 31°02′S through to the south of Lake Frome at 31°23′S, or from 80 to 130 km south of the latitude of Lake Cootabarlow, near 30°12′S (Figure 2), where Ian May observed his southernmost Eyrean Grasswrens. It is possible that the Eyrean Grasswren could be found south to this part of the Dingo-proof fence, but as the sandhills of the Strzelecki Desert peter out near here this might prove to be the southern limit of the species.

Acknowledgements

We thank our companions on this trip Barbara Cooper, Kay & Bruce Gilchrist, Donna Moody and Bob West. Kent and Cheryl Hotchin kindly allowed us to visit and stay on Winnathee and gave us useful observations on the plants and animals of the area. Ian May gave us much useful information on his records and visits to this part of NSW and adjacent parts of SA. We also thank Ted Nixon who accompanied IMcA & DM on their trip to Cameron

Corner in 2010. Andrew Black and Mick Roderick provided helpful comments on the manuscript. Useful discussions were also had with Chris Dickman (University of Sydney) and Julian Reid.

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Received 16 June 2017, accepted 13 October 2017, published online 14 December 2017