

# THE RANGE AND STATUS OF THE NULLARBOR QUAIL-THRUSH

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## SUMMARY

A review of previous observations of the Nullarbor Quail-thrush resulted in a list of 79 sites of known occurrence. During the present survey, 88 Nullarbor Quail-thrush were recorded at 55 sites. The Nullarbor Quail-thrush still occurs throughout the area from which historical records are known, except possibly the extreme western end of its range. The species is best classified as rare and probably declining.

## INTRODUCTION

The Nullarbor Quail-thrush *Cinclosoma alisteri* is confined to the Nullarbor Plain (Blakers *et al.* 1984), extending from the lime kilns, 23 km west of Naretha, in the west (Storr 1986) to near Ooldea (South Australia) in the east (Condon 1969; Reid 1990). Blakers *et al.* (1984) show two isolated groups of sightings that are connected by historical records. The Nullarbor Quail-thrush has been thought to be patchily distributed, with many apparently suitable areas being uninhabited by the bird (Blakers *et al.* 1984). Brouwer and Garnett (1990) classified it as being of 'Indeterminate' status while Garnett (1992) classified it as 'Rare'. The Nullarbor Quail-thrush leads a terrestrial life, feeding and nesting on the ground in chenopod shrubland (Garnett 1992; Burbidge and Pedler in press); these are among the characteristics associated with threatened Australian bird species (Garnett 1992). These characteristics are believed to make the quail-thrush vulnerable to changes caused through grazing by domestic stock and rabbits, predation by foxes and cats and extensive wildfire (Garnett 1992). Previous knowledge of the Nullarbor Quail-thrush is summarised in Burbidge and Pedler (1993). However, there is currently insufficient knowledge to allow effective conservation planning for the Nullarbor Quail-thrush, and there is a clear need for further clarification of its status, habitat, range and population size and trends (Burbidge *et al.* 1987; Brouwer and Garnett 1990; Garnett 1992).

The aim of this project was to determine the present status and range of the Nullarbor Quail-thrush. Information on habitat requirements and a preliminary assessment of the relative importance of possible threats to the species are provided elsewhere (Burbidge and Pedler in press).

## METHODS

We conducted a survey of the literature and of the collections and data held by the Western Australian and South Australian Museums to collate known information on the Nullarbor Quail-thrush and to compile a list of known localities. Unpublished records were included where known to us. This was followed up by field visits to these and other localities.

The first field trip (to the western Nullarbor) was conducted between 27 October and 3 November 1991. The second trip covered the full length of the Nullarbor between 15 June and 2 July 1992. The third trip was from 2 to 10 December 1992. Routes traversed are shown in Figure 1.

A total of 120 sites was visited. Of the 79 known historical sites for the species (Figure 2), 45 were visited to determine whether the birds were still present. Most of the remainder were too imprecise for us to be sure that we were at the same site, or were very close to other sites which were investigated. At most sites searches were made by two observers (only one on the third trip) spending up to 1.5 hours walking through suitable habitat, watching and listening for quail-thrushes. While travelling, a close watch was kept at all times for quail-thrush flushed by our moving vehicle. Where quail-thrushes were observed at either historical or new sites, habitat data were gathered (Burbidge and Pedler in press).

## RESULTS

A list of all known localities (historical and new) is presented in Appendix 1. Locations of the 79 historical sites (49 from Western Australia and 30 from South Australia) are shown in Figure 2. Three other generalised locations (in areas where more precise localities are known) were also recorded in the literature: Rawlinna Station (Seaton in Bonnin 1978) and Arubiddy Station (Bransbury 1987; Reid 1990) in Western Australia and Nullarbor National Park (Bransbury 1987; Reid 1990) in South Australia. The reported occurrence at Newman's Rocks, Western Australia (Marr and Hembrow 1991)

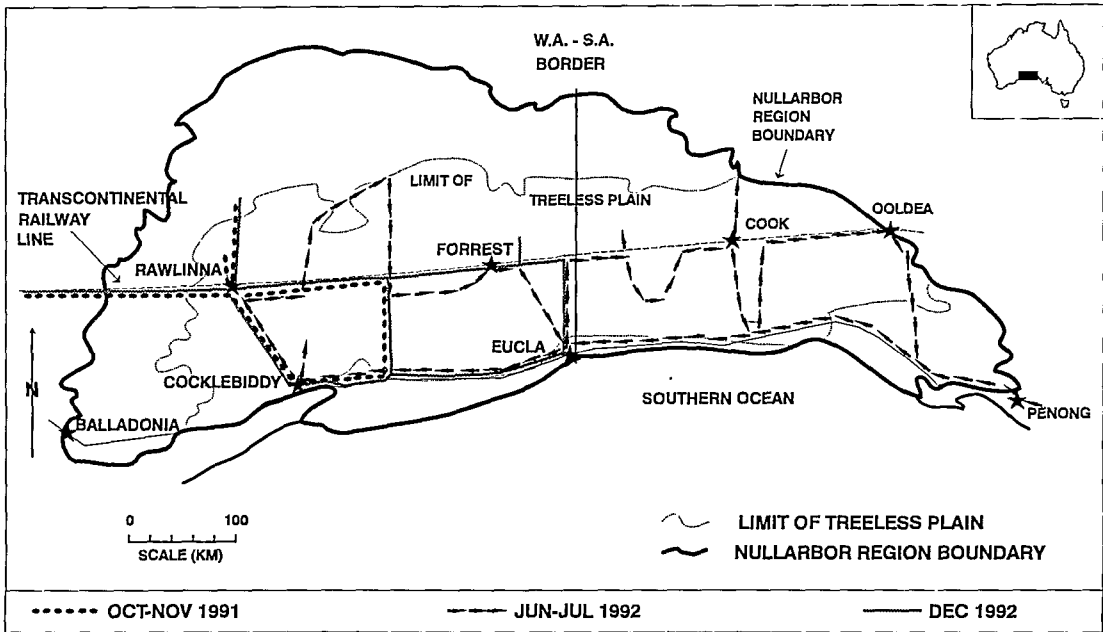


Figure 1. Routes traversed on the Nullarbor Plain in search of the Nullarbor Quail-thrush, October-November 1991, June-July 1992 and December 1992. The Nullarbor region and limit of the treeless plain are as defined by Beard (1975) and Laut *et al.* (1977).

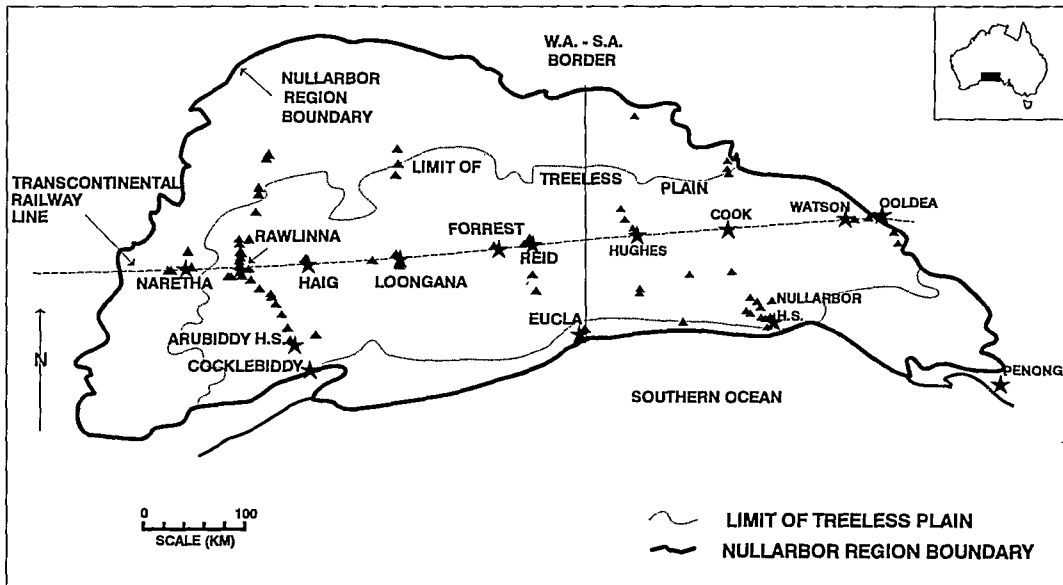


Figure 2. Locations of historical records of Nullarbor Quail-thrush (see Appendix 1 for details).

is considered erroneous. One sub-fossil location is known (Weekes Cave in South Australia; Baird 1990).

In the present survey, a total of 88 Nullarbor Quail-thrush was recorded at 55 sites (Figure 3; Appendix 1). A further 65 sites were searched unsuccessfully (Figure 4), although at a few of these, quail-thrush were heard at a distance but not located. Quail-thrush were located at 15 of the 45 historical sites searched (Appendix 1).

The distance traversed on the treeless plain during each survey (Figure 1) was approximately 900, 2150 and 1250 km respectively. About 60% of sightings of Nullarbor Quail-thrush were from birds being flushed by our moving vehicle. This represents about one sighting for every 150 km travelled on the treeless plain.

Three sites were searched on two occasions each in the present study. Two sites south of Loongana, where quail-thrushes had been located on the first trip, were searched unsuccessfully during the second trip. A site 64 km north of Cook, where a single Nullarbor Quail-thrush was recorded, was searched on the following day, and a quail-thrush found about 350 m from the previous day's sighting. It is not known whether it was the same bird.

At sites where we recorded quail-thrush, usually up to three birds were seen, but four birds were seen at two sites and six birds at one site (Appendix 1).

## DISCUSSION

### Range

All known locations of the Nullarbor Quail-thrush are confined to the Nullarbor region as defined in Figure 1. The boundaries of this region are those previously designated in Western Australia as the Eucla Botanical District (Beard 1975) and in South Australia as the Nullarbor Environment Region (Laut *et al.* 1977).

Comparison of Figures 2 and 3 suggests that the Nullarbor Quail-thrush has not disappeared from any area where it was known historically. The possible exception is in the extreme west of the range, near Naretha, but the species has been recorded there as recently as 1984 (Appendix 1; R.E. Johnstone pers. comm.). Localised habitat destruction by fire and grazing in many areas will have reduced the populations in those areas. This probably applies to some of the historical sites where we were unable to locate quail-thrush.

There are still some apparent gaps in distribution of the Nullarbor Quail-thrush, for example south of Loongana and east of Arubiddy Station, and south of Watson. Some such gaps are presumably simply from lack of access or searching. The area south of Watson, for example, was not searched during the present study, because there was no time. Some areas, such as south of Fisher, have extensive areas

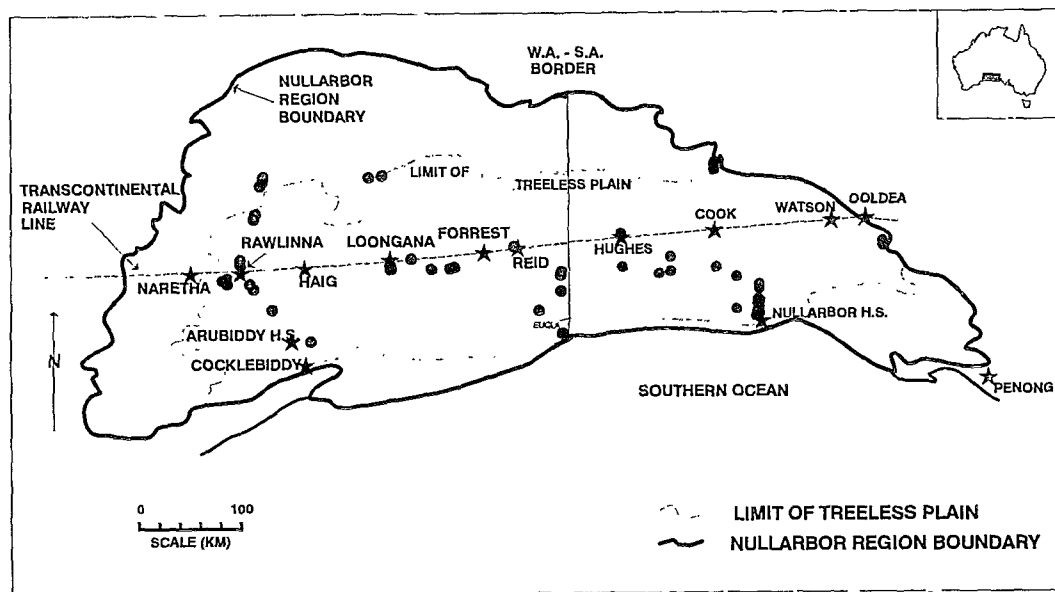


Figure 3. Sites where Nullarbor Quail-thrush were found in the present study (see Appendix 1 for details).

of saltbush *Atriplex* sp(p). with little or no bluebush *Maireana sedifolia*, and hence did not provide optimum habitat (Burbidge and Pedler in press). Continual changes in the vegetation of the Nullarbor Plain mean that present day habitat may be reduced in area and be more patchy than it once was. Other apparent gaps in distribution, such as south of Loongana (an area which was searched during the present survey), are more puzzling, although part of the explanation may lie in the short time spent searching.

Furthermore, at sites where we carried out searches on foot but did not record quail-thrushes, it cannot be concluded that they were not present. During field work in October-November and December we heard little calling, presumably because breeding had ceased (even though it extends this late in some years). The species is very difficult to detect, particularly in windy conditions (frequent on the Nullarbor) and if the birds are not calling. The evidence from the two Loongana sites (where we found quail-thrush on the first but not the second trip) suggests that several visits might be required before it could be assumed that quail-thrush were not present at a given site. Nullarbor Quail-thrush presumably have a very large territory or home range and it would be very difficult to search adequately. This is made even more difficult because the bird is wary and secretive, being more wary than other

quail-thrushes (Whitlock 1922). We presumably, therefore, missed birds at some localities but do not know to what extent.

In any future work, use of play-back of calls to detect birds could be investigated. Pre-recorded calls were not available to us and we did not have the time to obtain useful recordings. With many species this is a useful technique to increase the rate of detection but for some (e.g. western populations of the Ground Parrot *Pezoporus wallicus*; A.H. Burbidge unpubl.) it is of little practical use. Seasonal conditions will play an important role in the success of any such work, including obtaining density estimates, and it should be noted that our surveys covered a wide range of seasonal conditions in various parts of the plain, even within a single field trip.

Given the above constraints and the fact that we found quail-thrushes in a number of places where they were previously unknown, it would appear that the range of the species probably has not changed significantly in historical times (compare Figures 2 and 3) and it is still widespread within its range

#### Status

Our data do not allow an assessment of population changes but examination of historical accounts (Burbidge and Pedler 1993) suggests that population numbers have declined. The status criteria of Mace and Lande (1991) are difficult to apply to species

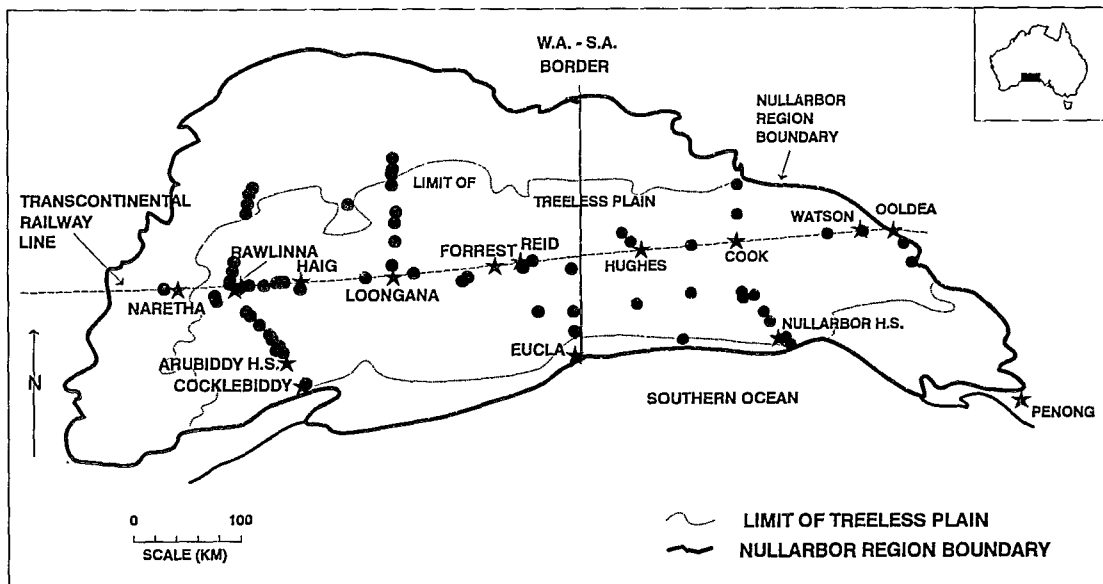


Figure 4. Sites searched unsuccessfully for Nullarbor Quail-thrush in the present study.

which are very thinly distributed and cryptic, such as the Nullarbor Quail-thrush. The species seems to be locally common in some areas such as around 110 km NNE of Rawlinna HS (Brooker *et al.* 1979; M.G. Brooker pers. comm.). However, it does seem to be rare compared with other species, particularly other quail-thrushes (Garnett 1992). On present knowledge, the species is perhaps best classified as rare and probably declining through habitat degradation (see Burbidge and Pedler in press).

In any future monitoring, an attempt should be made to develop quantitative estimates of population size. This is likely to involve fixed area searches.

### Habitat

Ideal sites for Nullarbor Quail-thrush support healthy, undisturbed, relatively dense stands of bluebush *Maireana sedifolia* (usually greater than 100 per hectare) with low levels of the introduced Ward's weed *Carrichtera annua* and, at least in good seasons, have reasonably extensive cover of native dicotyledonous annuals (Burbidge and Pedler in press). Seeds of annuals are probably an important component of the diet of the Nullarbor Quail-thrush (Ford 1983; R.E. Johnstone pers. comm.). The future of the Nullarbor Quail-thrush will therefore be determined by management of the bluebush shrublands of the Nullarbor.

The major threat to native shrubs on the Nullarbor Plain appears to be grazing by introduced herbivores, particularly rabbits, with subsequent invasion of Ward's weed and an increase in grasses. Sheep and cattle may contribute to this in some areas, but they occur on only part of the Nullarbor while rabbits occur right across the plain, and some examples of severe degradation occur where there are no domestic stock. Fire is also a threat, as bluebush is killed in severe fires, and regeneration after fire may be reduced in the face of grazing by introduced herbivores. The total explanation probably lies in an interaction between rabbits, fire, rainfall, drought and domestic stock. This issue is further discussed by Burbidge and Pedler (in press).

Because the future of the Nullarbor Quail-thrush appears tied to the maintenance of healthy, relatively undisturbed bluebush communities, the major management recommendation is to control rabbit populations and, ultimately, control Ward's weed and promote regeneration of perennial shrubs where damage has been greatest. Fire and rabbits are of concern to all land managers on the Nullarbor Plain. Because of the geographic extent of the problem,

co-operative approaches from a range of land managers and government and non-government agencies are likely to be most successful. In this context, it is worth noting both the efforts made to date by pastoralists on the western Nullarbor through the Land Conservation District Committee and the Western Australian Department of Agriculture, where attempts are being made to gain a better understanding of the role of rabbits in shrub loss, and the attempts by various researchers across Australia who are working on the general question of control of rabbit populations.

### APPENDIX 1: Localities where Nullarbor Quail-thrush have been recorded.

Abbreviations: ANWC = Australian National Wildlife Collection, CSIRO, Canberra; RAOU = Royal Australasian Ornithologists Union; SAM = South Australian Museum; WAM = Western Australian Museum; HS = homestead; H = historical site (i.e. prior to present study); N = "new" site.

Numbers in the far right column are numbers of Nullarbor Quail-thrush recorded at that site during the present survey.

#### Western Australia

18 km W of Naretha (1 calling on 11 Oct 84 and 2 seen on 12 Oct 84, R.E. Johnstone ms)	H	
16 km west of Naretha (near lime kilns) (Collins 1934, Storr 1986)	H	
Naretha (Whitlock 1922, Campbell 1922) (specimens)	H	
115/116 km NNE of Rawlinna siding (Ford 1983, Storr 1987)	H	
113 km NNE of Rawlinna siding (WAM specimen A12754, J. Bywater, 15 Aug 69; ANWC specimen 11725, J. Bywater, 8 Aug 68; ANWC specimen 17060, J. Bywater, 14 Aug 69; also RAOU Atlas 8 Aug 68 & 27 Sep 76)	H	
109 km N of Rawlinna siding (J.R. Ford notebook, 24 Aug 69)	H	
ca. 98 km N of Rawlinna siding (present study; site 15, 1991)	N	1
98 km N of Rawlinna siding (present study; site 116, 1992)	N	1
59 km N of Rawlinna siding (present study)	N	2
87 km N of Rawlinna siding (present study)	N	1
80 km NNE of Rawlinna siding (ca. 3 km N of Endeavour Bore) (ANWC specimen 17122, M. Brooker, 26 Nov 69; Brooker <i>et al.</i> 1979 and RAOU Atlas 26 Nov 73; J. Bywater, RAOU Atlas, 25 May 69; also ANWC specimen 17057, J. Bywater 25 May 69 and ANWC specimen 19220, J.C. Wombey, 27 Sep 76 both in this general area)	H	1

74 km N of Rawlinna siding (WAM specimen A13408, 24 Aug 69; Ford 1983)	H		ca. 16 km NNW of Arubiddy [HS] (Brooker <i>et al.</i> 1979)	H	
30 km N along Connie Sue Hwy (breeding, C/3 (hatching) and B/3, 4 Sept. 1991, A. and B. Wells pers. comm.) (2 km NE of Skylab Bore)	H	1	36 km N of Eyre Hwy on Cocklebiddy – Haig road, Moonera Station (S. Bennett, RAOU Atlas, 21 Dec 80)	H	1
29 km N of Rawlinna siding (WAM specimen A13410, 29 Aug 70)	H		Haig (Campbell 1922 – specimens: see Whitlock 1922. Also clutch of three eggs collected by E. Greenfield on 29 Jul 1942 and now in SAM)	H	
22 km N of Rawlinna siding (pair with small runner, 17 Jun 74, J.R. Ford ms)	H		65 km ENE of Sleeper Camp (NNW of Loongana) (present study)	N	1
15-20 km N of Rawlinna siding and SE of Endeavour Bore OS (J.B. Paton, RAOU Atlas, 23 May 74)	H		50 km ENE of Sleeper Camp (present study)	N	3
14.5 km N of Rawlinna siding (WAM specimens A13412, A11847)	H		Gunnadorah Station [near Haig] (Storr 1987)	H	
13 km N of Rawlinna siding (specimen 26 Aug 65, Ford and Sedgwick 1967)	H		24 km W of Loongana (F.L. Whitlock, eggs in H.L. White collection, RAOU Atlas, 31 Oct 21)	H	
11 km N of Rawlinna siding (specimen 26 Aug 65, Ford and Sedgwick 1967; one male on 13 Apr, pair on 14 Apr and 2, 1, 2 and 4 on 15 Apr 74, J.R. Ford ms)	H		Loongana (Whitlock 1922, Campbell 1922) (specimens)	H	
10 km N of Rawlinna siding (WAM specimen A13411, 29 Aug 70)	H	3	96 km N of Loongana at 30°07'S, 127°04'E (A. Chapman 22 Oct 91, unpubl.)	H	
6 km N of Rawlinna siding (WAM specimen A13423 and nest with 2 eggs, 23 Aug 69, J.R. Ford ms)	H	1	111 km N of Loongana (Ford 1983)	H	
5 km N of Rawlinna siding (WAM specimen A13407, 23 Aug 69)	H		86 km N of Loongana (WAM specimen A19682, R.E. Johnstone 1 May 85; Storr 1987)	H	
2 km N of Rawlinna siding (pair with 2 full-length juveniles, 16 Jun 74 and second pair on following day, J.R. Ford ms)	H		60 km N of Loongana (present study)	N	1
1.6 km N of Rawlinna HS (present study)	N	1	4 km S of Loongana (present study)	N	3
between Rawlinna siding and Seemore Downs HS (WAM specimens A13405, A13406, A13424, 21 May 68; Ford 1983)	H		8 km S of Loongana (WAM specimens A9668-9, 29 Jul 67, W.H. Butler)	H	1
N of Seemore Downs HS (Brooker <i>et al.</i> 1979) (rare)	H		20.3 km E of Loongana (present study)	N	1
2 km S of Seemore Downs HS (S.J.J.F. Davies, RAOU Atlas, 8 Jun 80)	H		18 km SW of Mundrabilla siding (present study)	N	3
5 km E of Rawlinna siding and 1 km N of railway line (W. Klau, RAOU Atlas, 14 Mar 81)	H		Forrest (Ford 1983)	H	
6 km due S of Rawlinna siding (10 km by road) (S.J.J.F. Davies, RAOU Atlas, 8 Jun 80)	H		35 km WSW of Forrest (present study)	N	2
15 km SE of Rawlinna siding (T?. Lynam?, RAOU Atlas, 10 May 81)	H		40 km WSW of Forrest (present study)	N	1
2 km S of Rawlinna HS (D. McQuie pers. comm. 1991)	H	2	Reid (R.A. Hewson per E.H. Sedgwick, RAOU Atlas, 1960-61)	H	2
(2.2 km S of Rawlinna HS in present study)			(2.1 km NNW of Reid in present study)		
1 km ESE of Waddalyinia Rockhole (present study)	N	3	7 km N of Reid (nest with C/2, 1954, E. McCrum pers. comm. Sep 1992)	H	
Waddilynia (Mathews 1921) [= Waddalyinia Rockhole, ca. 5 km S of Rawlinna HS] (1 km NE of Waddalyinia Rockhole in present study)	H	4	67.7 km N of Eucla on track to Reid (MO5) (J.A. Raines and A.H. Burbidge unpubl., Oct. 1986)	H	
14 km SE of Speculation Bore, S of Rawlinna (D. McQuie pers. comm. 1991)	H		48.7 km N of Eucla on track to Reid (MO1) (A.H. Burbidge unpubl., Oct. 1986)	H	
34 km S of Rawlinna (WAM specimen A13404, 31 Jan 66; Ford 1983)	H		34.7 km N Eucla on Reid track (present study)	N	1
ca. 15 km SE of Rawlinna siding (present study)	N	2	30 km S of Deakin (present study)	N	1
25 km ESE of Rawlinna HS (present study)	N	2	31 km S of Deakin (present study)	N	6
46 km SSE of Rawlinna siding (pair, 31 Jan 66, J.R. Ford ms)	H		46.4 km S of Deakin (present study)	N	1
ca. 50 km SE of Rawlinna siding (Oct 82, Chapman 1982)	H		3 km N of Eyre Highway on State border (Jaensch 1983)	H	
ca. 50 km NNW of Arubiddy HS (S. Bennett, RAOU Atlas, 20 Dec 80)	H				
39 km NNW of Arubiddy HS (present study)	N	3	<i>South Australia</i>		
30 km NNW of Arubiddy HS (WAM specimen A16524, 27 Jul 79; Ford 1983; also D. Watkins May 80, unpubl. and S.J.J.F. Davies, RAOU Atlas, 7 Jun 80)	H		ca. 2 km NW of Hughes (A.C. Robinson <i>et al.</i> 21 Mar 84, unpubl.)	H	1
			(3.5 km N of Hughes in present study)		
			12 km NW of Hughes (HU1) (Burbidge <i>et al.</i> 1987)	H	
			21.2 km NW of Hughes (HU3) (Burbidge <i>et al.</i> 1987)	H	
			ca. 35 km NW of Hughes (A.C. Robinson <i>et al.</i> eight records 9-16 Apr 84 and 17-23 Sep 84, unpubl.)	H	
			29°20'S, 129°30'E ("S of Forrest Lakes" – ? approx. 120 km N of Hughes; T. Dennis, RAOU Atlas, Jun 79)	H	
			26 km S of Hughes (present study)	N	1
			50 km SE of Hughes (present study)	N	1
			53 km S of Hughes (G. Chapman, RAOU Atlas, 31 Jul 79)	H	
			55 km S of Hughes (SANPWS, 7 Sep 84)	H	
			Koonalda (Ford 1983)	H	
			23.5 km S of Denman siding (present study)	N	1
			39 km S of Denman (present study)	N	1

68 km N of Cook (L. Pedler, 1 Sep 83, unpubl.)	H	1
66 km N of Cook (J.R. Ford notebook, 4 Sep 68)	H	2
61.6 km N of Cook (present study)	N	1
58 km N of Cook (WAM specimen A13409, 4 Sep 69; Ford 1983)	H	
64 km N of Cook (present study)	N	1
40 miles (64 km) SW of Cook (added egg collected by J.N. McGilp 29 Oct 31, in SAM; Condon 1962, 1969)	H	
37 km S of Cook (present study)	N	1
44 km S of Cook (L. Pedler, 1 Sep 83, unpubl.)	H	
4 km NW of Kudna Rockhole (present study)	N	1
13 km S of Knowles Cave (SANPWS, Apr-Sep 1984)	H	
1 km N of Nullarbor ?Roadhouse (S. Neville pers. comm. 1990) (2 km NNW of Nullarbor HS in present study)	H	1
5 km N of Nullarbor HS (present study)	N	2
6.5 km N of Nullarbor HS (present study)	N	2
11.5 km N of Nullarbor HS (present study)	N	1
13 km N of Nullarbor HS & 2.9 km W (present study)	N	1
14 km N of Nullarbor HS (present study)	N	4
16.2 km N of Nullarbor HS (present study)	N	4
19.5 km N of Nullarbor HS (present study)	N	2
13 miles (21 km) north of Nullarbor HS (specimen collected by W. Head, SAM B26516; Condon 1969) (21.9 km N in present study)	H	1
27 km N of Nullarbor HS (present study)	N	1
31 km N of Nullarbor HS (present study)	N	1
10 km WNW of Nullarbor HS (SANPWS, Apr-Sep 1984)	H	
15.5 km WNW of Nullarbor HS (SANPWS, Apr-Sep 1984)	H	
21 km WNW of Nullarbor Station (CA3) (Burbidge <i>et al.</i> 1987)	H	
25 km WNW of Nullarbor HS (SANPWS, Apr-Sep 1984)	H	
24 km WNW of Nullarbor HS (present study)	N	2
29 km NW of Nullarbor Station (CA4) (Burbidge <i>et al.</i> 1987)	H	
32 km WNW of Nullarbor HS (SANPWS, Apr-Sep 1984)	H	
Nullarbor HS (Cowles 1974) (specimen: male, 10 Oct. 1963)	H	
0.5 km E of Nullarbor ?Roadhouse (S. Neville pers. comm. 1990)	H	
10 miles (16 km) SW of Nullarbor Homestead (specimen collected by W. Head, SAM B27057 [?= Condon's (1969) record for "near Head of Bight"])	H	
4 km E of Watson (L. Pedler 25 Aug 83, unpubl.)	H	
near Watson (G. Leiblich, RAOU Atlas, 16 Aug 80)	H	
30 km N[W] of Pidinga Rockhole and ca. 30 km S[E] of Ooldea (Ford 1983; J.B. Paton, RAOU Atlas, 29 May 74)	H	1
15 km W of Ooldea (Ford 1983)	H	
Ooldea (Condon 1962, 1969) (specimens)	H	
34 km SE of Ooldea (present study)	N	4

#### ACKNOWLEDGMENTS

Funding for this project was provided by World Wide Fund for Nature (Australia), the South Australian Wildlife Conservation Fund and the Western Australian Department of Conservation and Land Management (CALM). We wish to

thank R.E. Johnstone for access to Western Australian Museum specimens and data and for useful discussions concerning Nullarbor Quail-thrush. A.C. Robinson assisted with the provision of extra South Australian records and P. Horton provided access to South Australian Museum collections. J.C. Wombey provided data on specimens in the Australian National Wildlife Collection, CSIRO, Canberra. CALM staff at Kalgoorlie assisted with logistics of field work. W.H. Burgess assisted with data collection and logistics on the second field trip. A number of observers contributed unpublished observations; these people are acknowledged in the text and/or Appendix 1. Special thanks are due to the people of the Nullarbor who allowed access to pastoral properties under their control and provided generous hospitality, valuable background information and, in some instances, new locality records for quail-thrushes: these include Peter and Barbara Brown (Arubiddy), Don and Judy Hogg (Kinclaven), Murray and Marg McQuie and Dougal McQuie (Rawlinna Properties). Jim Rolfe drew most of the figures. L. Brooker, M.G. Brooker and R.E. Johnstone made useful comments on earlier versions of the manuscript.

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Received: 12 July 1994