

THE DISTRIBUTION AND OCCURRENCE IN SOUTH AUSTRALIA OF OWLS OF THE GENUS *TYTO*

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SUMMARY

Three species of *Tyto* occur in South Australia. The records of each are reviewed and their status reassessed. Brief comments are given on nomenclature and taxonomy.

The literature on the occurrence of the Masked Owl in South Australia is extremely muddled, and consequently current accounts are grossly misleading. A review of the records suggests that overall this species is a rare vagrant to the southern parts of the State. On the Nullarbor Plain its occurrence may formerly have been more regular, though there have been no reports from there since the early 1930s. The nature of its status in the Mount Lofty Ranges district in Gould's time (1839) is also problematic. Two published records from western New South Wales are dismissed.

The distribution of the Barn Owl in the State is redefined, and its known occurrence on offshore islands detailed. The term Cave Owl, applied by Cayley (1931) to the Nullarbor populations of the Masked Owl, was actually coined by Whitlock (1922) for the Nullarbor populations of the Barn Owl.

The Grass Owl was first formally recorded in South Australia in 1975, from the north-eastern corner of the State. Further records are detailed, and it is suggested that the inland distribution of this species coincides with that of the Long-haired Rat *Rattus villosissimus*, i.e. throughout the Lake Eyre drainage and Barkly Tableland.

TYTO NOVAEHOLLANDIAE (Stephens, 1826) MASKED OWL

Of the status of this species in South Australia, Condon (1968-9) wrote "Not uncommon, but rare in forest country. Recorded in caves on Nullarbor Plain and at Carrieton. Specimens from Cooper's Creek, Ooldea, Tarcoola, Coober Pedy, and near Adelaide."

Little of this account is correct. In fact, the literature on the occurrence of the Masked Owl in South Australia is in a state of chaos. Among the factors contributing to the mess, the following two rank high:

(i) The varying applications of the name Cave Owl. This term appears to have been first used by Whitlock (1922), who applied it to the populations of the Barn Owl inhabiting the blow-holes of the Nullarbor Plain. Cayley (1931) adopted it as the English name for his new sub-species of the Masked Owl, *T. novaehollandiae thoughtoni*, from the same area, and

since then it has been generally taken to refer to the populations of Masked Owl inhabiting the Nullarbor. The issue is further confused by some later ornithologists (e.g. Collins 1934, see below) assuming that any *Tyto* species found in the Nullarbor blow-holes was a Cave (Masked) Owl.

(ii) Mathews' (1913) use of the combination "*Tyto alba* Masked Owl" for the Barn Owl (and *Tyto novaehollandiae* Chestnut-faced Owl for the Masked Owl). White (1917, 1919) used this nomenclature when referring to the Barn Owl, and this has led to the records involved being subsequently referred to the Masked Owl (e.g. the records of Barn Owls from Cooper's Creek, see below).

Below, I discuss the South Australia records of the Masked Owl and attempt to reduce the muddle to some order. The detail is in places laborious, but I consider it essential to the exercise.

RECORDS FROM THE NULLARBOR PLAIN

1. The first report of a species of *Tyto* from the Nullarbor seems to be that of Gibson (1909), who in September-November 1908 traversed the Plain east to Eucla. Under "*Ninox connivens*?" he wrote "Not identified; seen occasionally at night on the plains. Their abodes are the caves and blow-holes in the limestone". These sightings could refer to the Barn Owl or the Masked Owl or both.

2. Writing of owls he had observed on the Nullarbor, White (1919) used the heading "*Tyto alba delicatula* (*Strix novae-hollandiae*). Masked Owl." This represents the combination used by Mathews (1913) for the Barn Owl, into which has been inserted (possibly by the editor) the scientific name of the true Masked Owl used in the 1913 R.A.O.U. Checklist. Under this heading White (p. 196) wrote "The first specimen which came under notice was flushed from a thick bush in the sand-hill country, and it appeared to me to resemble *Tyto novaehollandiae* [Masked Owl] more than *delicatula* [Barn Owl]. All those examined afterwards on the plain [in December 1917] showed no variation from our commoner *delicatula*. There must be a great number of these birds

out upon the plains, for nearly every blow-hole was found to contain them, which are their breeding-places. Many young birds were seen in captivity with the railway people, and I was the means of liberating many, owing to their being confined in small boxes." Earlier in the account, on p. 193, White described finding owls in two wells between Ooldea township and Ooldea Soak, and specifically referred to these as "Screech or Barn Owls". Whereas the owl seen by White among the sandhills may or may not have been a Masked Owl, I consider it justifiable to accept his identification of those noted in the wells and blow-holes on the Plain as Barn Owls.

3. Le Souef (1921a, 1921b), under "Chestnut-faced Owl (*Strix castanops*)", reported seeing two large dark-brown owls with no white on them in a blow-hole near Hughes Stone late in 1920. If Le Souef is to be relied upon here, these may be accepted as dark-phase individuals of the Masked Owl. I have not been able to locate the feature Hughes Stone, which Le Souef implied was in the Ooldea district.

4. On 11 December 1920, Captain S. A. White collected a light-phase adult male Masked Owl (white beneath, wing 305 mm.) from the same blow-hole as 3. This specimen is in his collection at Fulham, S.A. Although White (1921) queried Le Souef's sighting of the dark-phase birds in the blow-hole, he did not mention having collected the above light-phase individual there; the latter was in fact first reported by Sutton (1923:99).

5. Troughton and Wright collected a light-phase female of the Masked Owl at Ooldea on 16 October 1921. This, the holotype of *Tyto novaehollandiae troughtoni* Cayley, 1931, is in the Australian Museum, reg. no. 026568. The wing of this specimen was given by Cayley as 326 mm, and he regarded it as comparable to an average-sized male of the typical Masked Owl. Mees (1964) gave wing-measurements for southern mainland populations of the Masked Owl as: males 298-322, females 326-358. Because Cayley (1931) referred to this specimen as "Cave Owl", the collectors must have told him that they obtained it from a cave or blow-hole. Yet there are no caves or blow-holes at Ooldea itself. On 16 October 1921, however, Troughton and Wright collected a specimen of the rodent *Leporillus conditor* from "a rock overhang" nine miles west of Ooldea (information from Mammal Register of Australian Museum, relayed by Dr. G. Smithers).

6. Whitlock (1922: 172-175), who worked on the Nullarbor Plain during September and

October 1921, made several comments on the owls there:

"My object in visiting Loongana was to examine a series of blow-holes a few miles to the west in the hopes of meeting with specimens of the Cave, or Barn Owl (*Tyto alba*).

"Until I got to Haig [from the west], I neither saw nor heard anything of the species . . . At Haig . . . I could hear the gentle "hoo, hoo" coming from all points of the compass . . . There were no caves or blow-holes known anywhere near to Haig . . .

"Not far from Haig was an abandoned water shaft, which had been put down to a depth of 200 feet . . . About 20 feet down, roosting on a rung of the ladder, I discovered a Cave Owl.

"At Loongana Owls formerly bred in the big cave some two miles E.S.E. of the depot, but the cave has been so much visited of late years that the Owls deserted it. At the depot itself a pair roosted for some time on the steel trestle work supporting a large feed tank . . . Another pair at one time, accompanied by three young ones, were also observed, and it is thought the female nested in the firebox of a derelict portable boiler standing a little distance from the railway. I visited a series of the blow-holes similar to those described by Captain White, which exist some miles to the west of Loongana. The upward current of air in some of them was very strong, and possibly this was the cause of their not being tenanted by any Owls. In one only did I see traces of bird-life. Owls are known at the large railway depot at Rawlinna, and are said to roost in cavernous hollows there. But at Naretha the only evidence of their presence was the record of one being caught by the foot in a trap set for rabbits. Evidently they have not spread so far westward on the plain, up to the present. Barn Owls, for all that, occur in the south-west of this State, as I have seen individuals in a dense tea-tree swamp near my own home."

This is, to my knowledge, the first time that the term Cave Owl was used, and it is of interest that Whitlock intended it to refer to the Nullarbor population not of the Masked Owl but of the Barn Owl, though its usage was subsequently usurped by the former. It is likely that most of Whitlock's observations and reports refer to the Barn Owl, at least those involving owls in the Haig watershaft and in the buildings at Loongana depot. However, Dr. M. J. Brooker (pers. comm.) has suggested that the birds Whitlock heard calling *hoo hoo* at Haig were not owls but Little Quail *Turnix velox*, a species that is seasonally common in this area.

7. Le Souef (1928), reporting observations made on the Nullarbor in or about November 1927, wrote "Cave Owl (*Tyto* sp.?). — Throughout the plain, living only in the blow-holes, are beautiful Owls, with pale-fawn-spotted backs and pure white breasts. Three were seen alive in the Perth Zoo. They are larger than *T. alba*, but did not seem so robust as *T. novaehollandiae*, and the specimens show no variation."

Insofar as Le Souef distinguished his birds from both the Barn Owl and the Masked Owl, one is left to guess exactly what he was looking at.

8. McColl (1929) reported owls from the Nullarbor Plain and the Hampton Ranges: "During the night, a screech would herald the approach on silent wings of an owl, possibly the Barn Owl (*Tyto alba*) . . . White Owls, probably a light phase of the Barn Owl (*Tyto alba*) are found in the caves on the Nullarbor, generally on the western side. I observed one of these perched on top of the house at Madura on two consecutive moonlight evenings." Presumably most of McColl's observations were of the Barn Owl, though some in the Nullarbor caves may have been of the Masked Owl; once more the observations are equivocal and of very little use.

9. McGilp (1932) visited the Nullarbor Plain towards the end of 1931 and reported Masked Owls: "The Nullarbor Plain abounds with limestone blowholes and caves, and in these the Masked Owl is generally found. When seen down a blowhole one is struck by its facial resemblance to Harold Lloyd, of horn-rimmed glasses fame. The edging of the facial disc has a very distinct dark outline . . ." This character of a pronounced dark edge to the facial disc occurs only in dark-phase individuals; light-phase individuals have the edging less pronounced, and superficially resemble large Barn Owls.

10. Hyem (1932) described as eggs of the "Cave Owl (*Tyto novaehollandiae troughtoni*)" two eggs collected in a blow-hole on the Nullarbor Plain by D. J. Hall in November 1931. The measurements given (changed to mm.) are 42.67 x 31.75, 41.40 x 32.51. These fall below the size-range of the eggs of the Masked Owl and within that of the eggs of the Barn Owl.

11. Collins (1934), in an article on the birds of the Nullarbor Plain, wrote "Cave (Masked) Owl. Found in any suitable cave," and indicated that he had found it breeding. In the McGilp Egg Collection (S.A.M.) there is a clutch of three eggs (B16671) attributed to this species, obtained by Collins from a cave be-

tween Rawlinna and Naretha, W.A. Information with the eggs states "Collected by J. Graham and H. Collins 20.9.32. Cave about 26 ft. down on bottom. Birds seen. Incubation started. Two eggs in among bones etc of last years nest one damaged egg lying a few feet away at side of stone. No other sign of old nest about." The eggs measure (in mm.) 42.4 x 33.2, 42.7 x 33.7, 43.25 x 33.5 — smaller than eggs of the Masked Owl but within the range of eggs of the Barn Owl. Possibly Collins and Hall assumed that their owls were Masked Owls simply because they were in caves.

12. In the S.A.M. there is a hitherto-unreported specimen of an adult light-phase Masked Owl, B16964, obtained alive in a cave "40 miles from Ooldea" by E. Carr and which died in captivity on 20 August 1933. Although its sex is given on the museum label as female, its winglength (310 mm.) is that of a male. We do not know when it was collected; it could have lived in captivity for years.

13. In 1962 Mr. D. L. Cook found the "desiccated but recent" remains of a Masked Owl in the Murra-el-ellevan Cave 4.5 miles (7.2 km) west of Cocklebidy Tank, Western Australia (Mees 1963); this specimen is preserved as a skeleton in the W.A.M. Exactly how recent the remains were is apparently not known; in a cave a desiccated body could be preserved for many years.

Many of the above records could refer to either the Masked Owl or the Barn Owl. Exercising rigour, the only records of the Masked Owl that we should accept are those based on specimens, *i.e.* 4, 5, 12 and 13. And of these, only the dates of 4 and 5 are known with certainty. Thus the most we can say definitely of the recent occurrence of the Masked Owl on the Nullarbor Plain is that two specimens were collected in the Ooldea district on 11 December 1920 and 16 October 1921.

Lundelius (1963) reported among deposits of bones from caves on the southern edge of the Nullarbor Plain (Cocklebidy, Murra-el-ellevan, Webb's and Snake Pit caves) the remains of several medium-sized species of mammals (including *Macrotis lagotis*, *Perameles bougainvillei*, *Trichosurus vulpecula*, *Bettongia lesueuri*, *B. penicillata* and *Lagorchestes hirsutus*), as well as of various mouse-sized species. It is possible that most of the medium-sized mammals were brought to the caves by Masked Owls, whereas most of the smaller ones were brought in by the smaller Barn Owls.* If this was so, the Masked Owl could well have been more regular in the area within the last few

hundred years, before the local extinction on the Nullarbor of most of the medium-sized native mammals (a process completed during the 1920s and 1930s).

* See remarks on prey of Masked Owl and Barn Owl by Fleay (1968).

GOULD'S RECORDS

Gould (1848) wrote "During my visit to the interior of South Australia, numerous individuals [of *T. novaehollandiae*] fell to my gun, which upon comparison presented no material variation from others killed in New South Wales and Western Australia . . . I may remark that, out of the numerous examples I killed in South Australia in the month of June, I did not meet with one in the white plumage."

Gould's "visit to the interior of South Australia" would have been his journey from Adelaide across the Mount Lofty Ranges into the Murray Mallee in 1839 (Whittell 1954: 91). That he found the Masked Owl numerous somewhere along this transect is of great interest. The species may have been undergoing a local bloom at the time. There is a second possibility, remoter perhaps, but more intriguing. In south-western W.A. and the northern and eastern parts of Australia the Masked Owl inhabits mainly forested areas, in contradistinction to the Barn Owl, which prefers lightly-wooded plains. Theoretically the heavily-wooded Mount Lofty Ranges ought to provide suitable habitat for the Masked Owl. One could speculate that Gould obtained his "numerous examples" in just this area, and that in his day the Masked Owl was a not uncommon resident of the Mount Lofty Ranges. It is even remotely possible that the Masked Owl exists in the Mount Lofty Ranges in the present day but has consistently been overlooked because of low density of populations and the dense nature of the woodland.

OTHER RECORDS OF THE MASKED OWL

Cooper's Creek. Terrill and Rix (1950) and Condon (1968-9) listed Cooper's Creek as a locality for the Masked Owl. This record originated from White (1917), who, writing of Barn Owls noted on his expedition to Cooper's and Strzelecki Creek in 1916, used Mathews' (1913) nomenclature "*Tyto alba* Masked Owl" (see above). That White's records were indeed of Barn Owls is substantiated by the presence of three specimens of this species, taken on this expedition, now in the S.A.M.:

B2226. Adult male, between Innamincka and Canowna, 6 October 1916.

B2227. Adult female, between Innamincka and Canowna, 4 October 1916.

B2228. Adult female, north-west of Mirramitta, 13 October 1916. (Note, however, the discrepancies in sexing and dates between White's account and the inscriptions on the labels of the first two skins.)

Tarcoola and Coober Pedy. Terrill and Rix (1950) listed two specimens of the Masked Owl in the S. A. White Collection from Coober Pedy and Tarcoola. These records were again listed by Mees (1964) and Condon (1968-9). I have examined both specimens. The one from Tarcoola, collected in 1923, is an adult Masked Owl in the light phase, with winglength of 296 mm. The specimen from Coober Pedy, however, collected in 1916, is a Barn Owl.

Lake Torrens. In the S.A.M. Bird Register there is an entry "OC [Old Collection] 10-VIII-1908 B1862 *Flammea novaehollandiae* [F] Head of Lake Torrens Don[ated by] Dr. H. Basedow Pirie St., Kent Town." It was registered in 1916, but was apparently donated some years earlier. Whether the date refers to that of donation or collection it is probably incorrect, for in 1908, according to notes in the S.A. State Archives, Basedow was in Europe.

On the relevant species-index card, this specimen is listed as being mounted. In the S.A.M. there are three mounted specimens of the southern mainland form of the Masked Owl, but unfortunately not one still bears its registered number. It is likely, but impossible now to prove, that one of these is Basedow's bird from Lake Torrens.

Hawker district. Mr. R. D. Elliott (1974) reported "On 9/6/73 a Masked Owl . . . was seen about 39 km north of Hawker at 2 p.m. being harried by two Yellow-throated Miners . . . Photos were taken." I have not yet been able to examine these photographs.

Manunda. Mack (1970) quoted a record of the Masked Owl on Manunda Station made by Mr. G. Skipper. Mr. Skipper (*in litt.* 20 March 1977) has kindly supplied the following details, which fit a dark-phase Masked Owl: "The bird was squatter than the Barn Owl, had very well covered legs, a tawny chest with dark speckles through it, dark brown shoulders and dark face . . . Not far away there is a huge rock with many small crevices and a big walk-in cave." Mr. Skipper could not supply the date, but recalled that he came across the bird early one morning perched in a Black Oak.

Carrieton. Sutton (1923: 99) wrote under Masked Owl "Professor F. Wood Jones gave Dr. A. M. Morgan a parcel of bones found in a cave at Carrieton, and amongst those bones were some of this species." I have been unable to trace this material. No reasons were given for its identification as bones of the Masked Owl.

Adelaide. In the A.M.N.H. there is a specimen of the Masked Owl (reg. no. 629456) labelled "Adelaide", the holotype of *Tyto novaehollandiae whitei* Mathews, 1912. The smallness of its wing (301 mm) suggests that it is a male. Possibly it was sent to Mathews by Captain S. A. White.

Aldinga. On 26 April 1975 Mr. A. Lees (1977) picked up a freshly killed adult female Masked Owl from a roadside in open farmland at Aldinga. The bird, now a study skin (S.A.M. B29583) is in the dark phase and has a wing-length of 348 mm.

The South-East. I can find no records of the Masked Owl from the South-East of South Australia. It may occur there, however, for it has been recorded at least twice in neighbouring districts of western Victoria:

1. From the remarks of D'Ombrain (1905), the species was not uncommon in the Casterton district in the first few years of the 1900s. D'Ombrain wrote "These Owls play great havoc with the rabbits caught in the traps set by the rabbiters," a habit noted by Fleay (1968: 114) among the Masked Owls in Tasmania.

2. A light-phase adult male Masked Owl (sexed by dissection, winglength 308 mm.) was picked up dead on the road at Portland Lagoon on 30 July 1974 by Mr. R. McCulloch. This specimen is currently in the possession of Mr. H. J. Eckert.

Pinaroo Lake (also known as the Fort Grey Basin, in extreme north-western N.S.W. near the S.A. border). In late August 1921 Drs. A. Chenery and W. MacGillivray worked the shores of Pinaroo Lake. Here Chenery recorded the Masked Owl: "When nearing the camp we flushed a Masked Owl from a large hollow in a green box-tree. This contained seven eggs, partly incubated . . ." In Dr. MacGillivray's egg-catalogue in the A.M., the relevant entry (copied for me by Mr. H. J. de S. Disney and Mr. W. Boles) reads: "*Tyto alba* 1/7 Taken from hollow 3 ft deep and 15 ins wide in gnarled old *E. microtheca* at Fort Grey NW NSW, by A. Chenery & W. MacGillivray on 22-8-21. Bird flushed. Eggs fresh to slight incubation resting on bed of woody dust & castings." Even without this identification of the eggs by MacGillivray as those of the Barn

Owl, one would suspect as much from the size of the clutch; the Masked Owl usually lays two eggs, rarely three or four (Fleay 1968).

Apart from this, the furthest west record from N.S.W. of the Masked Owl is of a specimen in the H. L. White Collection (N.M.V.) from Nyngan. Mees (1964) commented on the distribution of the Masked Owl in N.S.W. ". . . according to McGill (1960) it is confined to the forested parts east of the Divide, but I have examined a skin from Nyngan" (*i.e.* the above). The specimen from Nyngan was part of the Robert Grant Collection (Mrs. L. Arnold, pers. comm.). Because the data on numerous specimens handled by Grant are clearly incorrect or highly suspect, I consider that this record of the Masked Owl from Nyngan should be disregarded.

TYTO ALBA
(Scopoli, 1769)
BARN OWL

Of the status of this species in South Australia, Condon (1968-9) wrote "Common. Found throughout the State, including Kangaroo Island (once, at Penneshaw, August, 1926)."

My analysis, based on specimens in the S.A.M. and on published and unpublished information, gives the following picture. The Barn Owl in South Australia has been recorded mainly from the eastern part of the State, west to Abminga, Indulkana, Coober Pedy, Myrtle Springs, Kallioota, Port Augusta, south on Yorke Peninsula to Maitland, and, further east, south to Beachport and Millicent. There are several records from the Eyre Peninsula (Cortlyne Water Reserve, Tumby Bay, Port Lincoln district). The species also occurs on the Nullarbor Plain but its status there is not clear (see remarks under Masked Owl). It has also been recorded on offshore islands, to which it is presumably a vagrant: Kangaroo, Goose, Wardang, Thistle, Dorothee, Waldegrave, Franklin and Pearson (see below).

The Barn Owl is locally and seasonally common, *e.g.* in the North-East and on the Adelaide Plains, but is generally uncommon. It is a resident in some areas and an irruptive vagrant to others, its numbers fluctuating with the rise and fall of prey populations, *e.g.* *Mus musculus* in the southern farming districts and *Rattus villosissimus* in the Lake Eyre Basin (see Brandon 1948, Morton 1975, Cox 1976). The species inhabits mainly lightly-wooded plains, timbered watercourses and cultivation, nesting (eggs July-December) and roosting in hollow trees, caves, blow-holes, mineshafts and dry wells.

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It is rare or absent from the more mountainous regions; for instance, there are no records from the Musgrave Ranges, Everard Ranges, or Gawler Ranges, though it has been observed fairly frequently in the broad valleys among the North Flinders Ranges. It is also unrecorded from the sandhill deserts, e.g. the Simpson Desert and the Great Victoria Desert.

The recorded occurrences on the offshore islands are as follows:

Kangaroo Island. According to Mr. A. F. C. Lashmar (pers. comm.) the Barn Owl is an uncommon vagrant to the Island. In the S.A.M. there are two specimens: B6881, adult male found dead in haystack at Penneshaw, 5 August 1926, presented by Mrs. W. Johnston; B30771, adult, a desiccated corpse found on main road near Pelican Lagoon on 29 June 1975 by A. Lashmar.

Goose and Wardang Islands. D. Paton (1973) reported one Barn Owl on Goose and Wardang in August 1970 and a pair on Goose in May 1971. The first bird was watching flying across the $\frac{3}{4}$ mile watergap between the two islands. The pair on Goose Island were feeding on House Sparrows.

Thistle Island. On 21 September 1975, Mr. N. C. H. Reid (pers. comm.) and party flushed a Barn Owl from a thicket of tall teatree. This occurrence coincided with an influx of Barn Owls in the Port Lincoln district on the opposite mainland (September-December 1975).

Dorothee Island. On 26 November 1976 I flushed two Barn Owls from a cleft near the top of the chasm at the waist of Dorothee Island. Littered throughout the large White-faced Storm-petrel colonies on the island were many wings and feet of these petrels, and it is probable that the owls were responsible for this predation, there being no rats on the island. Mrs. J. Paton (1971) noted similar signs of predation on Dorothee in January 1969, but saw no owls.

Pearson Island. Cleland (1923), under "Owl", noted "A large bird seen once at night and pellets found near the northern summit" of Pearson Island. Possibly the bird was a Barn Owl. In the upper reaches of Main Creek on the North Section of the island a Barn Owl was seen in February 1973 and February 1974. (P. E. Hornsby pers. comm.).

Waldegrave Island. In the S.A.M. there is a specimen of the Barn Owl from this island (B28855), an adult female collected on 19 February 1975 by Mr. H. J. Eckert.

Franklin Islands. Finlayson (1946) and party visited West Franklin I. on 25 February 1946.

They found quantities of owl-pellets (containing the remains of the native rat *Leporillus conditor* and the bandicoot *Isodon obesulus*), and from a rock ledge on the north-western part of the island flushed six owls that they considered to be Barn Owls.

Eckert (1971) noted up to four Barn Owls on West Franklin during a visit in February 1969, including a pair flushed from a cave on the southern coast. He collected an adult male (S.A.M. B27694, 17 Feb. 1969), whose stomach contained the skull and fur of a *Leporillus conditor*. Pellets collected by Eckert from a roost were found to contain the remains of *L. conditor* (80%), *I. obesulus* (10%), and birds and insects, mainly Gryllacridae, (10%). Eckert commented that many partly eaten rats found at various spots had probably been killed by the Barn Owls.

The trinomial generally applied to Australian populations of the Barn Owl is *T. a. delicatula* (Gould, 1837); see, however, the remarks on Australian and Pacific populations by Galbraith and Galbraith (1962). I consider that the further application of trinomials to populations of this species should await a fresh taxonomic appraisal.

TYTO CAPENSIS (SMITH, 1834) GRASS OWL

This species was first reported in South Australia by Cox (1976), whose party observed several birds in Lignum *Muehlenbeckia cunninghamii* and the sedge *Eleocharis acuta* (syn. *E. pallens*) near Pandiburra Bore and near Kooncheri Waterhole on the Goyder's Lagoon floodplain in August 1975. Cox's party found two dead decomposed individuals, now preserved as skeletons in the South Australian Museum (B30758-9). The stomach of the less decomposed bird contained remains of the Long-haired Rat *Rattus villosissimus*.

In September 1976 W. Head, I. A. May and I visited Pandiburra Bore. On the afternoon of 18 September, Head flushed twelve Grass Owls from an area of the sedge *Scirpus maritimus* bordering the main channel of the bore drain. The owls rose from the sedge (which was growing in shallow water) and settled in the dense stand of Reedmace *Typha angustifolia* towards the main pool. Investigation of this stand showed that much of it was growing on moist exposed mud, and that the owls were presumably sheltering in the tunnels among the bases of the *Typha*. The following morning, which was hot and cloudless, we flushed two single

birds in an almost dry Lignum swamp with a dense sere understorey of *Alternanthera nodiflora* and *Psoralea cinerea* near the boredrain. Both birds rose from Lignum bushes near our feet and settled about 30 m on in the same vegetation. They were collected and prepared as study skins (colours of unfeathered parts noted 5 minutes after death): B30314, adult-phase plumage, male, testes not enlarged, blackish (? subadult), dome of skull fully pneumatized; iris umber, legs and toes dull pink-grey-brown, claws grey-brown, bill and mouth pinkish-white, eyerim dull pinkish-grey. Measurements (mm): wing 320, tail 119.5, culmen (from feathering) 33, tarsus 76.5. Plumage slightly worn, breast very pale buff, abdomen whitish. Stomach contained remains of the Long-haired Rat.

B30315, adult-phase plumage, female, ovary granular (oocytes not enlarged); skull, colours of unfeathered parts, and stomach contents as B30314. Measurements: wing 328, tail 125, culmen 30, tarsus 79. Plumage slightly worn; breast and abdomen very pale buff.

Towards dusk on 19 September 1976 we camped at Mirra Mitta Bore, which like Pandiburra Bore has created a long drain vegetated with *Typha angustifolia*. We walked along this bore drain at dusk and again early next morning, but saw no Grass Owls. However, two months later on 18 November, R. Schodde and J. L. McKean (pers. comm.) recorded about 15 Grass Owls at this locality, roosting in the tunnels amongst the bases of the *Typha* and in nearby Lignum, and hunting over the *Typha* at dusk. Schodde and McKean found numerous pellets, all containing remains of the Long-haired Rat. Although these two observers spent a longer time at Kooncheri WH (19-22 November 1976), they noted only one Grass Owl there.

Cox (1976) gave circumstantial evidence that Grass Owls had occurred in previous years in the Goyder's Lagoon area. Before visiting Pandiburra Bore we called at Clifton Hills HS, where we were told by the manager, Mr. F. Wilson, that he had frequently flushed owls in Lignum swamps in the district. As Cox suggested, these are much more likely to have been Grass Owls than Barn Owls (which prefer to roost in trees). I agree with Cox that the Grass Owl is probably always present in the district, its numbers, like those of the Letter-winged Kite and the Barn Owl, fluctuating with the numbers of the prey species (chiefly the Long-haired Rat).

The Grass Owl is the second species previously known mainly from the northern and eastern periphery of the continent that has re-

cently been detected in the swamps of the Lake Eyre drainage, the other being the Yellow Chat *Epthianura crocea* (Ford & Parker 1974). If, as seems to be the case, the Grass Owls of the Lake Eyre drainage prey chiefly on the Long-haired Rat, then their range, like that of the Letter-winged Kite, is likely to be coincident with that of the rat, *i.e.*, to extend up the Cooper, Diamantina and Georgina drainages to western Queensland and the Barkly Tableland district of the Northern Territory (Parker 1971, 1973). This possibility is supported by the recent find of a dead Grass Owl on the Barkly Highway in the N.T. about 20 km west of Camooweal on 24 October 1975, at a time when the Long-haired Rat was present in large numbers (Brooker 1976). Within this area, however, it is probably more localized and less common than the Letter-winged Kite and the Barn Owl because of its preferred habitat (Lignum, *Typha* and sedge swamps). The dynamic connexion, if any, between the interior populations of the Grass Owl and those of coastal and subcoastal areas remains to be investigated.

The proven occurrence of the Grass Owl in the Great Artesian Basin and on the Barkly Tableland prompts the reconsideration of two early records listed by Storr (1973) and queried by me (Parker 1974). The first is that of MacGillivray (1901) who, in an article on the birds of the Cloncurry district, wrote "The Grass Owl is occasionally met with on the downs [east of Cloncurry], in the long grass, where they nest." In the same area MacGillivray also recorded the Barn Owl as very common during plagues of the Long-haired Rat. The second record is that of Berney (1905), who recorded the Grass Owl in the Richmond district: "A small portion rescued from a Wedge-tailed Eagle in October 1903, and which Mr. A. J. Campbell was good enough to identify for me, is my only certain evidence of this Owl, but on two or three occasions, sometimes in daylight, I have seen a similar bird, which from the locality — open grass downs — it is pretty safe to say was referable to this species rather than to [the Barn Owl]." However, as I stressed earlier (Parker 1974), habitat alone is *not* sufficient to identify Grass Owls, for Barn Owls often hunt over open grassland. Assuming Berney's incomplete specimen to have been correctly identified as a Grass Owl, it may well have come from one of the *Typha*-vegetated boredrain swamps described by him as occurring in the southern half of the Richmond district (which he defined as the area within a 70-mile radius of Richmond.)

The Australian grass owls were referred to as *Tyto longimembris longimembris* (Jerdon,

1839) by Condon (1975) and regarded as conspecific with the African *T. capensis* (Smith, 1834)* by Amadon (1959) and Storr (1973). I adopt the latter course.

Holthuis & Mees (in Mees 1964) argued that the basonym of *Tyto capensis*, *Strix capensis* Smith, 1834, is a junior primary homonym of *Strix bubo capensis* Daudin, 1800 and therefore invalid. However, in Opinion 895 of the International Commission for Zoological Nomenclature (I.C.Z.N. 1970:194), *capensis* Daudin, 1800 is rejected and *capensis* Smith, 1834 is validated.

* syn. *T. punctata* Lichtenstein, 1854, (used by Condon 1975).

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APPENDIX I

GAZETTEER

(Latitudes south, longitudes east. All localities in South Australia unless otherwise stated).

- Abminga 26° 08', 134° 51'.
 Aldinga 35° 16', 138° 29'.
 Beachport 37° 29', 140° 00'.
 Camooweal, Q. 19° 55', 138° 07'.
 Canowna-Kanowna 27° 51', 139° 38'.
 Carrieton 32° 26', 138° 32'.
 Casterton, Vic. 37° 36', 141° 24'.
 Cloncurry, Q. 20° 42', 140° 30'.
 Cocklebidy Tank, W.A. 32° 02', 126° 06'.
 Cooper Pedy 29° 01', 134° 45'.
 Cook 30° 37', 130° 25'.
 Cortlinye Water Reserve, 8.5 miles (13.6 km) NW of Kimba.
 Dorothee I. 34° 00', 134° 17'.
 Franklin I. 32° 27', 133° 40'.
 Goose I. 34° 27', 137° 22'.
 Haig, W.A. 31° 00', 126° 05'.
 Hampton Ranges, W.A. 31° 52', 127° 05'.
 Hawker 31° 53', 138° 25'.

Indulkana (Springs) 27° 00', 133° 18'.
 Innamincka 27° 44', 140° 46'.
 Kallioota 31° 50', 137° 54'.
 Kimba 33° 08', 136° 25'.
 Kooncheri WH 26° 41', 139° 30'.
 Lake Torrens 31° 00', 138° 00'.
 Loongana, W.A. 30° 57', 127° 02'.
 Madura, W.A. 31° 56', 126° 58'.
 Maitland 34° 23', 137° 40'.
 Manunda 32° 48', 139° 49'.
 Millicent 37° 36', 140° 21'.
 Mirra Mitta (Bore) 27° 43', 138° 44'.
 Myrtle Springs 30° 27', 138° 13'.
 Naretha, W.A. 31° 00', 124° 50'.
 Nyngan, N.S.W. 31° 34', 147° 12'.
 Oldea 30° 27', 131° 50'.
 Pandiburra Bore 26° 43', 139° 27'.
 Pearson I. 33° 58', 134° 17'.
 Pelican Lagoon 35° 49', 137° 47'.
 Penneshaw 35° 43', 137° 56'.
 Pinaroo Lake, N.S.W. 29° 06', 141° 14'.
 Portland, Vic. 38° 21', 141° 36'.
 Port Augusta 32° 30', 137° 46'.
 Port Lincoln 34° 44', 135° 52'.
 Rawlinna, W.A. 31° 01', 125° 20'.
 Richmond, Q. 20° 44', 143° 08'.
 Tarcoola 30° 41', 134° 33'.
 Thistle I. 35° 00', 136° 09'.
 Tumby Bay 34° 22', 136° 08'.
 Waldegrave I. 33° 36', 134° 47'.
 Wardang I. 34° 30', 137° 22'.

The South Australian Museum, Adelaide.