

The Birds of South-west New South Wales

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Early in 1954 I took up duties at Deniliquin in the south-west of New South Wales and a year later I moved to nearby Finley where I remained until January 1959. From those two centres I frequently travelled to most of the towns in the Deniliquin Police sub-district to perform relieving duties for periods of up to three months. Towns so visited were Berri-gan, Tocumwal, Jerilderie, Mathoura, Barham, Moulamein, Balranald, Euston and Dareton. It is obvious that I had an admirable opportunity to investigate the distribution of bird life in this corner of the state.

I endeavoured to spend two complete days in each week, and frequently the intervening night, "in the bush". Most of my annual month's leave was spent in the area, twice with a team of R.A.O.U. members. Shift work allowed me many half days for observing, and frequent duty patrols to out-lying settlements and stations, permitted casual observations and brought me many useful contacts with property owners and bushmen. During the 1956 floods I spent much time in Army D.U.K.W.S. (Army "Ducks") penetrating flood country otherwise inaccessible. In October 1959 and March 1960, a total of six weeks was spent holidaying in the Wentworth area. I stress the considerable time spent in the field as it is the aim of this paper to set out the present-day status of the birds throughout this considerable stretch of country. With but few exceptions all observations are my own. No attempt has been made to search the literature for past references.

Apart from a few sand-ridges and the undulations in the mallee the whole area is flat. Average annual rainfall is about 15 inches in the east, decreasing to under 10 inches in the west. Rainfall is usually spread over the year. Temperatures over the century mark are frequent in the long summer, and, in the winter, frosts occur on most nights but do not persist far into the day.

There are few different types of habitat in the area and the constant repetition of these made my task simpler and practicable. It is possible here only to outline the chief types of vegetation.

Red gum (*Eucalyptus camaldulensis*) is found along the Murray, Murrumbidgee, Lachlan and Darling Rivers, along the Edwards River and its numerous associated tributaries, along the Billabong and Yanko Creeks and around most of the larger lakes. In the west it grows in narrow belts, but in the east, where considerable areas are frequently flooded, the stands are more extensive and in places vast forests are formed. The chief of these, all administered by the Forestry Commission of New South Wales, are the Gulpa Forest extending between Tocumwal and Mathoura, the Werai Forest between Deniliquin and Moulamein, and the Koondrook and

Little Murray Forests extending from near Moama to west of Barham. The red gum, where it occurs, is usually the dominant if not the sole tree present, but occasionally the yellow box (*E. melliodora*) and river cooba (*Acacia stenophylla*) occur in good numbers. In the Gulpa Forest there is a very small plantation of introduced pines, mostly *Pinus canariensis*, and although insignificant in area against the many square miles of surrounding red gum, this plantation has had a considerable effect on local bird life. Here is the only locality where I found the Leaden Flycatcher, the Grey Fantail and the Golden Bronze-Cuckoo breeding. Red gum also grows in clumps on the grass plains in the east.

The black box (*Eucalyptus largiflorens*) is the typical tree along all the minor creeks, around the less permanent lakes and in all areas subject to infrequent flooding. Sometimes it grows in conjunction with an undergrowth of lignum (*Muehlenbeckia cunninghamii*), bluebush (*Chenopodium auricomum*) or old man saltbush (*Atriplex nummularia*). Mallee (*Eucalypt* spp.) occurs as a block from Dareton in the west to almost as far east as Moulamein. Much of it has been cleared in the east but from Balranald westwards, although grazed by sheep, it remains dense. For the most part it is the larger or bull mallee. Areas of belar (*Casuarina lepidophloia*) and apple bush (*Heterodendrum oleifolium*) interspersed with various other scrub trees occur throughout the mallee and in the far west such timber dominates the pure mallee. In this western area, particularly around Dareton, the sugarwood (*Myoporum platycarpum*) becomes very prominent.

Much of the eastern area between Berrigan and Deniliquin was originally covered with scrub timber such as pine (*Callitris glauca*), buloke (*Casuarina luehmannii*), needlewood (*Hakea leucoptera*) and many others, but it is now cleared and few stands of timber have been left. This whole area is now one of irrigated pastures.

From just south of the Billabong Creek, and northwards, the country is mostly treeless. In the east, the plains are covered with grasses (*Chloris* and *Danthonia*), but westwards from about Wanganella and Hay, saltbush (*Atriplex* spp.) dominates and extends to the extreme west of the area, north and west of the mallee belt. On the grass plains, there are some good stands of boree (*Acacia pendula*). There is also a stretch of grass plain extending west of Deniliquin to beyond Tullakool. There are a number of transitory swamps on the open plains which are haunts of birds when they are filled with water. Cane grass (*Glyceria ramigera*), lignum and bluebush are the usual vegetation in the swamps, with cumbungi (*Typha angustifolia*) growing in some of the more permanent ones. There is also a large cumbungi swamp in the Gulpa Forest.

It will be obvious that the following annotated list does not contain every species that frequents the area, but I am con-



fident that no bird that now occurs with any regularity or in any numbers has been overlooked. Future observers will record rare migrants or vagrants, occasional visitations of nomadic species will occur, and perhaps isolated pockets of some unobtrusive species will be located. Already I have heard of rare visitations being recorded in the period covered by this paper. H. J. Frith saw two Pied Geese (*Anseranas semipalmata*) at Fletcher's Lake, Dareton, in 1958. N. J. Favaloro received a specimen of the Swift Parrot (*Lathamus discolor*) from north of Wentworth during the widespread movement that occurred in 1958. Members of the Bird Observers' Club at camp at Jerilderie during Easter, 1959, recorded a Rufous Fantail (*Rhipidura rufifrons*).

There are some notable absentees from the list, some often recorded in the past, but as this is not a history of ornithology in the area I will make no mention of them here. However, I would like to draw attention to the absence of some mallee species, such as *Hylacola cauta* and *Drymodes brunneopygia*, both of which occur commonly in mallee in north-western Victoria, and around Rankin Springs well to the east of the area. I have spent many hours, day and night, searching for these birds without success. I do not know of any records from the area or of specimens having been taken in the past. The mallee in the area is, in fact, an "island" bounded on the south by the Murray River with its belt of red gum and black box, and on the west, north and east by open saltbush or grass plains. A narrow tongue of mallee does extend along the Lachlan River towards the mallee country farther east, where in the past K. H. Bennett recorded the above species at Mossgiel and where they now occur commonly north of Griffith, but this strip ends before Oxley is reached. *Amytornis striatus* and *Stipiturus mallee*, both of which are common south of the Murray River, have apparently not been able to cross that boundary.

A number of papers dealing in greater detail with the distribution of some species of birds have appeared under my name in *The Emu* and these are listed at the end of this paper with appropriate references in the text after the name of the birds concerned.

I wish to acknowledge the assistance of fellow members E. Le Souef and B. Keays, residing on properties at Wanganella, who accompanied me on many field trips. I also wish to extend thanks to A. R. McGill, not only for the map included herein, but for his constant and successful efforts to infuse me with enthusiasm for bird study, so that my bird excursions were raised to a maximum effort and never reduced by idleness or climatic conditions.

ANNOTATED LIST

Dromaius novae-hollandiae. Emu.

Except in the closely settled irrigation areas, such as those around Berrigan, Finley and Tocumwal, this species is quite common, particularly on the open saltbush and grass plains where flocks of up to

60 birds have been seen. It is also frequently met with in the heavily-timbered country along the rivers, especially in the Gulpa and Koon-drook State Forests, and also in mallee country. Nesting usually starts in May and June.

Leipoa ocellata. Mallee-Fowl.

Despite the large tracts of apparently suitable mallee country, this bird is very rare, although old, deserted mounds, which are frequently seen, indicate this has not always been its status. Only in one locality, between Euston and Balranald, is the species common, but this spot is known to the Italian market-gardeners of Euston and its continued survival there is consequently very improbable. Near Euston itself, in the Benanee area, where Mallee-Fowl have been recorded earlier (*Emu*, 54: 186), I could find only disused mounds. Two very tame birds, which were often to be seen feeding alongside the Sturt Highway at Benanee, were shot in 1956.

Coturnix pectoralis. Stubble-Quail.

Found throughout the area but not a very common bird. There is a tendency for numbers to collect in lucerne paddocks in the irrigation areas and, at times, the species is frequently seen in saltbush country. It occurs throughout the year, there being no evidence of migratory movements, but its numbers are influenced by rainfall and the consequent grass growth. In June 1955, many hundreds were found in one paddock at Wanganella which had been flooded earlier by a local, summer storm, resulting in an exceptional growth of grasses. The birds were in company with hundreds of Little Quail and Horsfield Bushlarks. As drought conditions became widespread in 1957, the Stubble-Quail left the whole area and had not returned prior to my departure.

Synoicus australis. Brown Quail.

Only odd birds were seen, all in the Wanganella area. It is apparently restricted to rank growth in swampy places and as records were from October to February only, may only be a summer visitor.

Turnix varia. Painted Quail.

Occurs in small numbers along the river frontages in red gum timber, throughout the area. The Billabong Creek and the Gulpa Forest are particularly favoured. It is present throughout the year. There is a quail which occurs with some regularity in the mallee, and the habitat would suggest the Painted Quail, but I never succeeded in confirming the identity.

Turnix velox. Little Quail.

This species is apparently a nomad. In the good seasons of 1955 and 1956 it was abundant in the area as far west as Moulamein but was not seen in other years. It was present throughout the winter and summer, breeding during October and November, and favoured sand-hills with a cover of corkscrew grass, open grassland and stubble. A very dense concentration was seen at Wanganella in June 1955 (see also Stubble-Quail).

Geopelia placida. Peaceful Dove.

Common in the more extensive stands of timber, particularly the red gum, but does not occur in mallee. Present throughout the year, breeding from early spring to late summer (April) and flocking in the winter months.

Geopelia cuneata. Diamond-Dove.

Mainly a summer visitor occurring between November and March, during which period breeding takes place, only odd birds being seen in the winter months. It is found throughout the area, but is not common, and is usually close to water in black box timber.

Phaps chalcoptera. Common Bronzewing.

Found throughout the area in timbered country but not favouring the denser red gum forests. It is uncommon in the east, becoming progressively common to the west, where it is abundant in the mallee. Breeding in October and November, it is subject to some flocking in late summer and winter and during this period I have seen flocks of over 200 birds in the Euston area attracted by fruiting black tea-tree (*Melaleuca pubescens*). Some illegal shooting takes place in this locality and I have heard of bags of 100 pigeons. The species is vulnerable because of its habit of flying to isolated tanks in the mallee just before dusk.

Ocyphaps lophotes. Crested Pigeon.

A common to abundant resident, generally distributed in all lightly timbered areas except red gum tracts which are mostly avoided. It also keeps away from mallee although it occurs in belar patches or other non-eucalypt growth in the mallee. In towns, particularly Finley, it is practically domesticated, feeding unconcernedly in streets and gardens. Although flocks of up to 50 birds occur in the winter months, breeding seems to take place throughout the year.

Hypotaenidia philippensis. Banded Landrail.

Records, from September to March only, indicate this species to be a summer visitor. It is uncommon, occurring in rank vegetation close to the rivers. In such habitat I have seen it at Tocumwal, Mathoura and Conargo. Small numbers occur along the more reed-grown irrigation channels around Finley, Berrigan and Tocumwal.

Porzana fluminea. Spotted Crake.

Quite a common bird, particularly favouring cane grass, lignum and bluebush swamps, it is found throughout the area and is apparently resident, breeding in October and November. Following the floods of 1956 it was abundant and I saw scattered parties of up to 20 birds.

Porzana pusilla. Marsh-Crake.

Seen only three times. At a cane grass swamp on Bundyulumblah station, Wanganella; at Forest Creek, Wanganella; at floodwaters near Urana. These records were in November, December and January of 1956/57, indicating an influx following the 1956 floods.

Porzana tabuensis. Spotless Crake.

Seen only at various places along the reed-lined Forest Creek between Conargo and Wanganella, between August and March, suggesting that it is a regular summer visitor to this restricted area. It appears to be quite common but is very difficult to locate.

Tribonyx ventralis. Black-tailed Native Hen.⁵

There appears to be a very small resident population at suitable swamps which is considerably augmented in flood years. In 1955 and 1956 great influxes of this species occurred and flocks numbering many hundreds were a common feature of the whole area. Countless thousands of birds must have been present during those two years and breeding was continuous throughout winter and summer. By the end of 1957 most of these birds had left the area. Cane grass, lignum and bluebush swamps are the chosen habitat; permanent reed-lined swamps, the rivers and waters in heavily timbered country are not frequented.

Gallinula tenebrosa. Dusky Moorhen.

A resident throughout the area, mostly along the permanent waters such as billabongs, lagoons and backwaters of the rivers. It is not a common bird and is not affected by floods, numbers in 1956 being little increased. Breeds August to October.

Porphyrio melanotus. Eastern Swamphen.

There is a small resident population along suitable reed-lined creeks and swamps. Large numbers move into temporary flooded areas, par-

ticularly the cane grass swamps. Flocks of a hundred or more birds frequently take up residence in rice-paddocks, causing considerable damage. Breeds September to November.

Fulica atra. Coot.

Enormous flocks of this species containing more than 10,000 birds are a feature of late summer and winter on most of the larger lakes in the area, such as Yanga Lake, Moira Lakes and Fletcher's Lake. However, such waters are not used for breeding, which appears to take place only in flooded areas. In 1956, nesting was widespread throughout the whole area on the extensive floodwaters. Coot occur on all larger waters, permanent lagoons and in small numbers on the rivers.

Podiceps cristatus. Great Crested Grebe.

Occurs on most of the larger, more permanent waters, particularly Yanga Lake where flocks of over 200 may sometimes be seen during the winter months. At this time and in late summer some wandering takes place, birds appearing at unexpected spots, such as small lagoons at Finley and Tocumwal and the Mulwala Irrigation Canal at Berrigan. Breeding lasts from November to February, reed-lined swamps such as Forest Creek, Wanganella and The Reedy in Gulpa Forest, being the chosen habitat.

Podiceps ruficollis. Little Grebe.¹⁷

A common resident frequenting backwaters of rivers and creeks, small dams and waters with some reed or tree cover. Large flocks form on more open waters in the winter months but these do not attain the size of flocks of the Hoary-headed Grebe. Breeding occurs from September to December with some autumn nesting about March and April.

Podiceps poliocephalus. Hoary-headed Grebe.^{5 17}

Occurs commonly on the transitory swamps that form on the plains, and nests there in large colonies between August and November. It avoids, for the most part, the timbered waters and is seldom seen on the rivers or their backwaters. Flocks of several hundreds occur on the larger lakes during the winter months. In dry seasons, when their breeding swamps are non-existent, the flocks persist through the summer, some two to three thousand birds being present throughout the summer of 1958 on Fletcher's Lake.

Phalacrocorax carbo. Black Cormorant.⁵

A species whose numbers fluctuate according to the local water conditions. In flood periods it nests in large colonies along the rivers and in the flooded areas. Although occurring on any type of water, it prefers the larger lakes and the main rivers, where it will form into flocks which feed *en masse*, driving the fish before them. Sometimes these flocks are quite remarkable in size. In February 1956, at Yanga Lake, for two hours I watched large numbers of these birds flying low over the water. By taking snap counts it was possible to estimate that this flock contained over 10,000 birds. This vast assemblage gathered in one corner of the lake, a tumultuous, seething mass of black, the birds gorging on the packed schools of fish herded against a weir. When they took flight at my close approach, the noise of their flapping wings was deafening and the whole flock disappeared in its self-produced spray. The fish were carp.

Phalacrocorax sulcirostris. Little Black Cormorant.

In habitat and habits like the preceding species, but numbering considerably less, although it is still a common bird.

Phalacrocorax varius. Pied Cormorant.

The least common of the cormorants, occurring only singly or in very small parties. The largest party seen was 17 birds at Moorna, west of Wentworth in April 1958. Records suggest that this bird is

absent from the area from April to October and I never found it breeding. It occurs both on large lakes and small streams throughout the area but definitely prefers the former.

Phalacrocorax melanoleucus. Little Pied Cormorant.⁵

Although its total numbers may be exceeded by the Black Cormorant, this is undoubtedly the most frequently seen shag. It will visit the smallest of waters, dams and roadside drains. It seldom forms into flocks of more than a dozen and is often solitary. A resident in fluctuating numbers, it breeds when conditions are suitable.

Anhinga novae-hollandiae. Australian Darter.

Frequents the rivers, billabongs, lakes and the permanent lagoons, but avoids the temporary swamps. Occurs only singly or in very small parties, never forming into flocks. The largest number seen at any one time was 36, the birds being scattered around Yanga Lake in April 1957. Occurs throughout the year, although very few birds are seen between November and January. It is during these months that the birds retreat to the more inaccessible spots to breed.

Pelecanus conspicillatus. Pelican.

A common bird frequenting all types of waters from small dams to the rivers and lakes. Following the 1956 floods it was particularly widespread and abundant, the drying-up of the floodwaters and swamps supplying a readily accessible supply of food. A flock of 445 birds was seen at Black Swamp, Wanganella, in December 1957, scooping yabbies out of the muddy water that was nowhere more than 2 inches deep and certainly not deep enough to float a Pelican. In March 1960 a flock of 1,900 birds was seen at Fletcher's Lake. Immature birds appeared after the 1956 floods and breeding could have taken place in the area. The Pelican is present in the area throughout the year.

Chlidonias hybrida. Whiskered Tern.⁵

A summer visitor, which appears in September with increasing numbers through October. It remains to breed if conditions are suitable, and finally departs in April. Numbers vary considerably, being dependent on the presence of swamps suitable for breeding. In 1955, breeding was widespread in considerable numbers (*Emu*, 56: 339-352). In 1956, despite extensive flooding, only one breeding colony, an enormous one of several thousand birds near Urana, was seen. On numerous occasions I have seen birds arriving or passing over in spring and always they have been coming from the west. Although no movement in the opposite direction has been observed in the autumn, records indicate a steady retraction westwards, the late observations in April always being in the far west of the area in the Wentworth district. A flock of about 50 birds frequented Fletcher's Lake, Dareton, from early August 1958. This flock, all the birds of which were in winter plumage, remained static on the same water, an unsuitable one for breeding, and it is quite possible they had wintered there. It would appear that Whiskered Terns breeding in the area spend the winter in the interior, or at least, to the west of the area under review. Dareton could be the eastern end of this wintering area.

Gelochelidon nilotica. Gull-billed Tern.

Like the preceding species, this bird is mainly a summer visitor, but occurs in much smaller numbers. Birds arrive in September and leave again in January, although I have one winter record of five birds at Tchelery on June 10, 1957. This spot is near the location of an annual nesting colony on the dry plains west of Hay. This colony, which in 1959, contained over 300 birds, nests on the open plain away from water other than the small stock tanks. During the 1956 floods there were possibly other colonies as the species was widespread and common. In other years, away from the Hay area, only migratory birds were seen. The Whiskered Tern on migration apparently travels

high, descending rapidly to suitable waters which it patrols a few times in a compact flock, apparently appraising the breeding or feeding potential, and then either disappears into the sky again or breaks the flock and starts to feed or bathe. The Gull-billed Tern, however, appears low over the water, flies directly and purposefully over its full length, perhaps circles a small island on which it suddenly drops, or else continues its deliberate course across the dry land without a change in height or direction. It travels in parties of about ten, whereas the Whiskered Tern may be in flocks of over 100. In spring the Gull-billed Tern seems to come only from the east, but I have no evidence of a return movement. It is known that this species is a common winterer on parts of Australia's east coast.

Hydroprogne caspia. Caspian Tern.

This is a bird which is visiting the Murray area in increasing numbers. For the most part it appears to be present from January to August, although odd birds may be seen in any month. This suggests it leaves the area to breed, probably returning along the Murray to the colonies known to exist at its mouth. Birds may be seen patrolling the Murray River between Wentworth and Buronga and it must follow the river farther west as it is a common species at the lakes around Kerang, Victoria. It does not yet appear to have found Yanga Lake, Balranald or Waldair Lake west of that town, but at Fletcher's Lake and other smaller lakes near Dareton and at the numerous lakes around Mildura on the Victorian side of the Murray it is a common bird. The largest party seen comprised 54 birds at a lake on Moorna Station, Wentworth, on April 8, 1958. Undoubtedly this bird will extend higher up the Murray and possibly eventually breed.

Larus novae-hollandiae. Silver Gull.

Silver Gulls are always present in varying numbers at the larger lakes throughout the area. Whenever floods or heavy rains give rise to temporary swamps, this Gull is quick to appear, often surprising one in its uncanny appearance even whilst the rain is falling. I recall one occasion when rain started after midnight, yet by 10 a.m. a flock of 40 gulls was sporting itself on a large puddle which had formed on the stock route near Deniliquin which the previous day had been arid, burnt-up plain. Except in the far west of the area, where the Murray River is more a succession of lakes behind its locks than a river, the Gull shows little liking for the rivers and creeks. At Mildura, Victoria, flocks of Gulls are fed with bread and scraps by passers-by. Following the 1956 floods a large colony nested on a dam bank at Urana, between September and November. About 300 birds nested and many young birds were reared. At the same time another colony nested on top of the flood-surrounded Hay-Moulamein Road near Tchelery. At times flocks of Silver Gulls may be seen following the plough. During the 1955 grasshopper plague at Deniliquin many Gulls were seen hawking grasshoppers in mid-air.

Arenaria interpres. Turnstone.

A lone bird was at Lake Ranfurley, Merbein, Victoria, on November 1, 1959. When flushed it circled high and at times crossed over the Murray into New South Wales but did not settle there.

Erythronyx cinctus. Red-kneed Dotterel.

This species favours the temporary swamps on the open plains, occasionally visiting the shores of the larger lakes, but it does not frequent the rivers or tree-lined billabongs. It does not like bare mud but keeps under cover, particularly liking cane grass and bluebush, and it places its nest under such cover, sometimes even building a substantial nest in the network of stems of a bluebush where they emerge from the water. Present throughout the year, but in reduced numbers in winter months; it breeds from September to November.

Lobibyx novae-hollandiae. Spur-winged Plover.

A common resident occurring in all but heavily timbered country. It is abundant in the irrigation areas and common in the arid plains country provided a dam or creek is not too far away. An early breeder, commencing its nesting activities in June, it finishes before the summer months and forms into flocks of up to 100 birds.

Zonifer tricolor. Banded Plover.

Not such a common bird as the previous one, preferring drier areas, being particularly partial to the saltbush plains. In 1954 and 1955 it was abundant in the Deniliquin district, nesting plentifully in suitable areas of dry plain. Flocks that formed in the summers of those years and moved into the saltbush contained up to 200 birds. In subsequent years far fewer birds were to be seen, either in the flood year of 1956 or the drought year of 1957, suggesting that this is an "average season" bird liking neither extremes of wet or dry.

Pluvialis dominicus. Eastern Golden Plover.¹⁰

A single bird recorded at a swamp on Wargam Station, Booroorban, on October 14, 1957.

Charadrius bicinctus. Double-banded Dotterel.^{6 13}

A flock of 36 birds at a swamp on Bundyulumbalah station, Wanganella, on May 8, 1956. At Fletcher's Lake, Dareton, there were two birds on April 7; one on April 27 and one on August 24, 1958.

Charadrius alexandrinus. Red-capped Dotterel.

When the plains north of Wanganella flooded in 1956, large numbers of this species appeared and bred. This is as far east as I recorded it but farther west it is a common resident around the permanent and temporary lakes and larger swamps. Flocks of up to 200 birds are not uncommon around the perimeter of such waters or on not too distant claypans and stony ridges which they resort to when not feeding. Breeds from September to December.

Charadrius melanops. Black-fronted Dotterel.

A common and resident species throughout the area, being found near all types of water but preferring river banks, billabongs and lagoons surrounded by timber. Outside the breeding season, which extends from August to January, flocks of up to 20 birds may be formed.

Peltohyas australis. Australian Dotterel.

Distributed throughout the saltbush plains north of Billabong Creek, the Tullakool plains and in the ridge country north of Wentworth along the Darling River. It is difficult to assess its true status as it is a very quiet bird but it is probably rather rare. I have walked into a flock of over 40 birds near Wanganella, but I only noticed the birds accidentally when one came into the field of my binoculars as I was watching an Orange Chat. My records extend from August to April, suggesting that the species may move out of the area in winter.

Himantopus leucocephalus. White-headed Stilt.⁵

Usually a common bird, resident throughout the area, but rare in the winter months. It frequents most waters, other than the rivers, but prefers shallow swamps with a dense growth of short grasses or similar vegetation. It breeds in small colonies from September to November, nests being placed on vegetation in shallow water or on bare islets.

Recurvirostra novae-hollandiae. Red-necked Avocet.⁵

A common resident throughout the area which frequents the temporary swamps on the plains and the shallow parts of drying lakes. Colonial in its breeding, it usually selects an island, a dam-bank surrounded by flood water being a favourite site. Nests are placed

close together, as many as 150 pairs using the same small island. When islands are not available, nests are placed on clods of mud in receding water or on top of dead saltbushes and other low growth. In the flood year of 1956 this species was very abundant, and breeding was continuous from May to January. Breeding completed, large flocks of up to 1,000 birds formed in suitable localities.

Limosa lapponica. Bar-tailed Godwit.

Three birds at Fletcher's Lake, Dareton, from October 30 to November 3, 1959.

Tringa glareola. Wood-Sandpiper.

A rare summer visitor occurring singly or in very small parties at swamps with some tree cover and a reedy surround. Recorded at Finley and Dareton on different occasions between September 21 and March 25.

Tringa hypoleuca. Common Sandpiper.¹²

A single bird recorded near Wentworth on February 9, 1958.

Tringa nebularia. Greenshank.^{10 12 13}

A regular and not uncommon summer visitor throughout the area which frequents swamps and rice-paddocks. Usually single birds only are seen, but flocks up to 16 have been recorded. My earliest record was on October 26 and the latest April 12.

Tringa stagnatilis. Marsh-Sandpiper.¹⁰

Single birds at Wanganella on December 8, 1957, and at Dareton on November 3, 1959, and up to six birds at Dareton during March 1960.

Erolia ferruginea. Curlew-Sandpiper.^{10 13}

A regular but uncommon summer visitor to suitable spots throughout the area. Occurs in very small parties and my records are from August 8 to May 6. The birds on the latter date were in full breeding plumage.

Erolia ruficollis. Red-necked Stint.^{10 13}

A common summer visitor to the larger swamps and lakes, occurring in flocks of up to 200 birds. Records are from August 23 to May 6. During April 1958 when daily visits were made to Fletcher's Lake, Dareton, it was evident that a considerable migration took place, the percentage of birds in breeding plumage varying each day. Many of these birds were found resting away from the lake's edge, sheltering behind clods of mud and dried cow-pats on close-cropped grass a mile from the water.

Erolia acuminata. Sharp-tailed Sandpiper.^{10 13}

A common to abundant visitor throughout the area, sometimes in flocks of 500 birds or more, records dating between August 23 and May 4. It frequents the open swamps and lakes and does not occur on river banks or the tree-lined billabongs.

Erolia melanotos. Pectoral Sandpiper.^{10 13 16}

Apparently a rare summer visitor to the whole area, favouring open swamps, particularly those with close-cropped grass as a border. In addition to the records already published, a single bird was at a swamp near Finley on January 1, 1959, and a single bird at Fletcher's Lake on March 11, 1960. Records are between September 19 and March 30.

Calidris canutus. Knot.

One at Fletcher's Lake, Dareton, on October 30, 1959.

Gallinago hardwickii. Australian Snipe.¹⁰

An uncommon summer visitor, occurring singly or in small parties, favouring billabongs in thickly timbered areas. Records are from September 26 to February 23, none being further west than Moulamein.

***Rostratula benghalensis*. Australian Painted Snipe.**

I recorded this bird at two places only. In October 1955 a small number were at Moonee Swamp, Deniliquin, and were probably nesting. In November 1956, birds were seen at Barratta Station between Deniliquin and Moulamein, and these were also believed to have been nesting.

***Stiltia isabellae*. Australian Pratincole.**

A few birds were seen each summer in the Hay, Conargo and Urana districts, but it is probable that the area is a little south of this bird's usual range. In the flood year of 1956, however, the species was widespread and common and nesting was recorded at a number of places. Contrary to popular opinion, the favoured haunts of this species are the swamps, where it feeds on the sunbaked mud surrounds, chasing the flies and other insects on foot and not hawking in the air. When not feeding it tends to leave the water and rest on the bare, open plains, or on claypans, a mile or so from water. It also nests in these latter areas, but the swamps are its feeding ground and an important factor in its distribution. Records are from October 24 to February 17.

***Burhinus magnirostris*. Southern Stone-Curlew.**

Quite a common bird throughout the area, being particularly common in the irrigation areas around Finley and Berrigan and almost abundant between Deniliquin and Moulamein in the vicinity of the Edwards River. It regularly frequents the immediate vicinity of towns, feeding at night on vacant building blocks and resting during the day under trees on the outskirts. Possibly some immunity is obtained from foxes by this habit. A sedentary bird throughout the year, it being possible to locate the same pair resting under the same tree for months on end. Nests in October and November.

***Eupodotis australis*. Australian Bustard.**

Undoubtedly very small numbers of this bird still occur but I was never able to find any. Following the 1956 floods I received reliable reports of birds, either singly or in pairs, at Balranald, Moulamein, and Barham, and I believe there is a small resident population near Pooncarie.

***Grus rubicundus*. Brolga.**

There is a small population along the Billabong Creek from beyond Urana to Moulamein. They frequent the grassy plains through which this river runs, particularly in the Jerilderie area, where flocks of 16 birds have been seen, the Wanganella area, and the rice paddocks of the Wakool area. Sightings of young birds indicate that breeding occurs. A smaller population is centred around Finley and Tocumwal and breeding is regular at one swamp in that area. It is apparently a resident bird and I have no records outside of the areas named.

***Plegadis falcinellus*. Glossy Ibis.⁵**

A regular summer visitor to the whole area, numbers varying from year to year, the largest flock seen being of 70 birds between Moulamein and Balranald. It particularly favours the Wanganella area where it probably breeds each year. Records are between October 19 and February 17. It frequents swamps and flooded areas.

***Threskiornis molucca*. White Ibis.⁵**

Present the year round throughout the area but with reduced numbers in the winter months. There are nesting colonies at Wanganella, Mathoura and Balranald, reed-beds being the favoured site, but colonies are not so large as those of the Straw-necked Ibis. In 1956 some 4,000 birds nested at Wanganella, the peak of activity being in November. Usually seen in swampy places, both open and thickly timbered, seldom occurring in dry paddocks.

Threskiornis spinicollis. Straw-necked Ibis.⁵

In an average season numbers of this species are at their lowest in June, rising gradually to a peak in November. There are a number of places in the Wanganella district where breeding takes place and there are rookeries near Balranald and north of Urana. Numbers nesting are influenced by seasonal conditions, there being no breeding in dry years. In 1956, 66,000 pairs occupied the two sites in the Wanganella area used that year. At times large flocks of this species feed in dry paddocks, although swamps are the more favoured habitat.

Platalea regia. Royal Spoonbill.

A few pairs nest in the ibis rookeries and the species may be seen throughout the area although in far less numbers than the next species. Only odd birds are to be seen from May to July.

Platalea flavipes. Yellow-billed Spoonbill.

Outnumbers the preceding species 20 to 1. Present throughout the year but numbers from May to July are halved. Flocks of 150 birds are not uncommon around drying swamps. Nests, which are placed in trees standing in water, may be solitary or in small colonies.

Egretta garzetta. Little Egret.

A rare bird, mainly a summer visitor, being practically absent from March to August. Outside the flood year of 1956 very few birds were seen at all. However, the bird is common on the Lachlan River, just north of the area under review, and breeds there in colonies. It is possible this river is the southern limit for the main body of Little Egrets, only stragglers extending to the Murray River except in flood years. Seen mostly at reedy lagoons or on waters amongst thick timber, it occurs throughout the whole area.

Egretta intermedia. Plumed Egret.

Favours the same type of habitats as the preceding species but is more common. The peak in numbers is attained in December and January and I have no records for the period May to July.

Egretta alba. White Egret.

By far the commonest egret, records showing it outnumbers the preceding species 25 to 1. It is plentiful around the timbered billabongs and reedy lagoons and occurs in lesser numbers at all types of water. Flocks containing 150 birds are to be seen. Numbers are reduced in the winter months and few birds are seen during the period May to July. The main breeding colonies are located at Mathoura and near Balranald.

Ardea novae-hollandiae. White-faced Heron.

A common resident throughout the area and there is no evidence of a reduction in numbers during the winter months. In autumn very large flocks of up to 200 birds are sometimes seen, particularly on irrigation paddocks. It occurs at all types of water. Nesting takes place from August to January, nests usually being solitary, but in 1956 the numbers of birds breeding on the flooded treeless plains were so great they were forced into colonies. Many nests were located in bushes only 3 or 4 feet above the water.

Ardea pacifica. White-necked Heron.

About half as common as the preceding species and tending to leave the area in the winter when there is a marked reduction in numbers from April to August. Although it may occur at all types of water it shows a decided preference for the transitory swamps overgrown with dense vegetation and in such spots flocks of 200 birds or more have been seen. For breeding, which starts in September, it resorts to dense riverside timber, usually nesting very high in small colonies, although solitary nests have been found.

Nycticorax caledonicus. Nankeen Night Heron.

Although this species is found throughout the area every summer, its total numbers are most variable, being directly influenced by seasonal conditions, and in dry years the species is rare. In 1956 large numbers nested at many colonies located in riverside timber and the birds' nightly exodus to their feeding swamps was quite a spectacle. There is a peak population in December and January and the winter exodus is practically complete, very few birds being seen between May and August.

Ixobrychus minutus. Little Bittern.

My few records of this species are all from the Conargo and Wanganella area where the reedy Forest Creek is the chief attraction, although one record from amongst the cabbages at Bundyulumbulah homestead was a little astray. Undoubtedly this retiring species would be easily overlooked and records from over the Murray River near Mildura indicate that it occurs throughout the area under review. I only recorded it in the period August to March and it is probably a summer visitor.

Botaurus poiciloptilus. Brown Bittern.

In 1956 a remarkable influx of this species occurred. The bird was widespread and common, occurring both in reedy swamps and on the temporary lagoons formed on the plains. Nesting was almost colonial. At Moonee Swamp, Deniliquin, I found 9 nests only a few yards from each other, each placed on top of sheep-stunted boree trees and open to the sky. Vegetation was only a foot high and the Bitterns were easily seen feeding or standing rigid in their typical posture of concealment, a wasted effort in such an open environment. The use of such open sites was common at that time. In other years, the species was confined to reedy, permanent swamps from Frenchman's Creek, Wentworth in the west to Urana in the east. I have records of odd birds in May and June but the majority of birds were seen from October to February. The 1956 influx took place in August. Frequently occurs in rice-paddocks.

Cereopsis novae-hollandiae. Cape Barren Goose.⁵

I have included this species on the evidence of property holders living in flood areas along the Edwards River where it occurred in small numbers in 1955 and 1956. I was unable to personally verify the identification but there can be little doubt that this was correct. I also received details of birds seen near Euston in 1956. The presence of this bird in the Kerang district of Victoria has been recorded by Vic Lowe (*Emu*, 58: 28), and N. J. Favaloro (*in litt*) has received a specimen shot in the Mildura district.

Ducks

The ecology of the common ducks occurring in the area has been dealt with by H. J. Frith in several papers in *C.S.I.R.O. Wildlife Research*, 2: 19-50, and 5: 97-183, and the interested reader is referred to this work. Species dealt with include *Chenonetta jubata*, Wood Duck;⁵ *Anas superciliosa*, Black Duck;⁵ *Anas gibberifrons*, Grey Teal;^{5, 8} *Anas rhynchos*, Blue-winged Shoveler;⁵ *Malacorhynchus membranaceus*, Pink-eared Duck;^{5, 8} *Aythya australis*, White-eyed Duck.⁵ I would draw attention to the amazing concentration of these species that occurred through 1958 at Fletcher's Lake, Dareton, one of the few stretches of water left after the 1957 drought. At various times there were flocks of 2,000 Black Duck, 20,000 Grey Teal, 500 Shoveler, 12,000 Pink-eared Duck and 8,000 White-eyed Duck, a truly amazing spectacle. Frith's researches missed the large concentrations of White-eyed Duck that occur on the locked parts of the Murray River in the far west of the area.

Cygnus atratus. Black Swan.

A common bird throughout the area occurring on all waters except the small dams, and at times large flocks will feed in lucerne paddocks away from water. Breeding commences in June, sometimes continuing until December. When completed huge flocks form on the lakes, such as Moira, Yanga and Fletcher's. Such flocks may contain almost 10,000 birds and they disperse during late May and June.

Dendrocygna eytoni. Plumed Tree-Duck.⁵

A rare summer visitor to the area from August to January, occurring in small flocks (maximum seen 24) on flood waters, lagoons and swamps. In 1955 and 1956 it was almost common and was seen in many districts as far west as Balranald but I obtained no evidence of breeding. Locals refer to it as the Queensland Goose. Distinct from these visitors is a resident colony of some 80 birds on a property near Blighty. Their origin is unknown, but it is believed they are genuine wild birds that arrived less than ten years ago, and now, given strict protection by the present property owner, they are apparently increasing. They camp during the day at any of the three tanks on the property and fly at night to irrigated paddocks up to 15 miles distant. In the winter there is a tendency for some local wandering and small numbers attempt to camp away from the property, usually thereby meeting destruction. They breed on the property between October and January, nests being placed in long grass and even under sapling trees planted close to the homestead as windbreaks.

Casarca tadornoides. Mountain Duck.⁵

This bird breeds in fairly good numbers throughout the area, the Billabong Creek being a particularly favoured locality. Nests are usually sited very high in dead trees standing in water but I have one record of a nest in a rabbit burrow, near a swamp on the treeless plain west of Deniliquin. Irrespective of seasonal conditions breeding always commences in July but may be extended through to November in good seasons. Many birds leave the area from January to March but an influx occurs in April, numbers building up in the colder months with large flocks of 1,000 birds being occasionally seen in May. I think these winter flocks represent more than the local breeding population. There is a subsequent dispersal from the area of the majority of the birds.

Anas castanea. Chestnut Teal.⁵

Found throughout the area but in very small numbers, seldom being other than singly or in pairs, usually in company with the Grey Teal. Seen in every month of the year and one breeding record in October. Not seen in 1958 after the 1957 drought.

Stictonetta naevosa. Freckled Duck.⁵

A reasonably common duck in its favoured haunt, the lignum and bluebush swamps. Such swamps south of Hay frequently have flocks of 200 or more birds and they are much persecuted. In 1958, when most of the swamps were dry, a concentration of this species occurred at Fletcher's Lake and I counted one flock of 520 birds. It has a typical habit of perching on submerged posts and stumps and at Fletcher's Lake, where a fence runs across part of it, every post would be occupied by a Freckled Duck.

Oxyura australis. Blue-billed Duck.⁵

In 1956, this species occurred on many swamps throughout the area but normally it is confined to the cumbungi-covered permanent swamps and lagoons such as Forest Creek, Wanganella, Frenchman's Creek, Wentworth and the Lachlan reed-beds. In the winter months large flocks of this bird occur on Yanga Lake, Lake Marimley and Fletcher's Lake. Such flocks, which may number up to 500 birds, sometimes persist until mid-October, when a dispersal takes place, presumably to the breeding haunts.

Biziura lobata. Musk-Duck.

A common resident at all reedy lagoons, backwaters and deep swamps with good cover. Flocks often occur on open waters but there appears to be no regularity in such flocking which may be seen in winter or even in the breeding season which is from October to November.

Circus assimilis. Spotted Harrier.

Not a common bird. There is a small and resident population on the plains in the vicinity of Hay. Elsewhere, although birds may be seen at any time, there is a tendency for them to occur when crops are fully grown. From October to December they are frequently seen over wheat and barley paddocks in the Berrigan and Finley districts, and from February to April over the rice paddocks near Wakool and Moulamein. Wintering birds are usually in the vicinity of water and may occur in small parties of up to five birds.

Circus approximans. Swamp-Harrier.¹⁵

A common bird throughout the area. Figures indicate that there is a breeding population which nests in October and subsequently moves away, a smaller wintering population and a spring and autumn passage population. Seldom seen away from swamp areas.

Accipiter fasciatus. Australian Goshawk.**Accipiter cirrocephalus.** Collared Sparrowhawk.

In the field, these species are often indistinguishable. Both are reasonably common residents throughout the area, the Goshawk possibly being the commoner. Nesting occurs in September and October. Both species have a habit of flying low over towns in the evening in search of roosting sparrows.

Aquila audax. Wedge-tailed Eagle.

Despite ceaseless persecution this bird remains fairly common, particularly in the western part of the area. Eggs are usually laid by early August and although most nesting takes place in the more remote areas I have known of young birds reared close to Finley and Deniliquin.

Hieraaëtus morphnoides. Little Eagle.

A common resident, usually in timbered areas, particularly favouring the mallee. Breeds from August to November.

Haliaeëtus leucogaster. White-breasted Sea-Eagle.

Found in good numbers along the Murray River throughout the area, nesting in the east at Mulwala, Tocumwal and Mathoura and at numerous spots further west. Occurs regularly at all the larger lakes, nesting at some, and has been seen in flood time along the Edwards River at Moulamein. I have only once seen a juvenile bird and it is apparent that after leaving the nest, the young completely vacate the area, returning when mature. It is a winter breeder usually, eggs being laid in June, although nesting may be prolonged into November.

Haliastur sphenurus. Whistling Eagle.

An abundant bird along the rivers and creeks, occurring in lesser numbers in drier areas. At times it forms into flocks of up to 50 birds, especially around slaughter-yards and at places where myxomatosis is killing rabbits in numbers, but usually it is found in pairs. Breeds in August and September.

Milvus migrans. Black Kite.

A resident bird in the western part of the area, particularly around Wentworth. There is also a small resident population centred round the Balranald slaughter-yard. It keeps to the rivers for the most part. At times irruptions of this species take place when it becomes commoner and more widespread. A minor irruption occurred in 1958 as the

drought intensified and the species was common along the Murray River as far east as Barham. Flocks of up to 80 birds were seen. In 1955 considerable numbers moved into the Deniliquin area when a grasshopper plague occurred. It was a fascinating sight watching a line of Kites riding the updraught above the embankment of a large irrigation canal, each bird motionless except for its tail movements. One would casually drop a foot into the cloud of 'hoppers, grab one and convey it to its beak.

Lophoictinia isura. Square-tailed Kite.

A very rare bird. There was a minor irruption in the spring of 1957 when odd birds were seen at Moulamein, Deniliquin and Mathoura. All were in lightly timbered country which they quartered at slow speed in a manner reminiscent of the Swamp-Harrier. One bird was seen at Fletcher's Lake in September 1958.

Elanus notatus. Black-shouldered Kite.

There is a small resident population in the Berrigan-Finley-Tocumwal area. The 1956 floods were followed by a minor plague of mice which in turn brought a very large influx of these Kites. They moved into the whole of the area in considerable numbers and nested almost continuously for the next 12 months. By then the effects of the drought were beginning to be felt and the Kites started to move out, and by late 1958 all had left except a single pair remaining at Dareton and the Finley population which remained in its old habitat. It would appear that the area under review is "non-elanus" territory. I never recorded *E. scriptus*.

Falco longipennis. Little Falcon.

A common resident throughout the area. Like the Goshawk, it has the habit of entering towns in the evening and raiding the roosting sparrows. Nests in September and October.

Falco hypoleucus. Grey Falcon.

A very rare bird. There is a resident pair on Bundylumblah station, Wanganella, and I have seen birds near Dareton, where there is possibly another resident pair. In 1955 two birds were seen at Deniliquin picking out grasshoppers from the flying swarms plaguing the district at that time.

Falco peregrinus. Peregrine Falcon.

Common in all timbered areas. Nests from September to November.

Falco subniger. Black Falcon.

Not a common bird, although it was fairly widespread following the 1956 floods. Seems to frequent open plains where strips of timber are growing and Jerilderie is a particularly favoured locality. None seen in the latter part of 1957 or in 1958. In November 1959, one bird was seen to take a Sharp-tailed Sandpiper at Fletcher's Lake.

Falco berigora. Brown Hawk.

Usually a common to abundant bird in all open habitats, but subject to some variation. In 1957 most of the species left the area. Nests September to November.

Falco cenchroides. Nankeen Kestrel.

A common bird everywhere except in very thick timber. Became very rare in 1957 until late 1958. Nests September to November.

Ninox novae-zeelandiae. Boobook Owl.

A common resident throughout the area.

Ninox connivens. Winking Owl.

Apparently restricted to the red gum timber along the rivers where it is not uncommon, being found throughout the area. This species appears to catch a good proportion of its food by hawking insects above the tree-tops in the late summer evenings.

Tyto alba. Barn-Owl.

A reasonably common bird throughout the area. The mice plague which followed the 1956 floods caused quite an irruption of this species. They concentrated mainly on the open plains, spending the day in the clumps of timber. It was nothing unusual to flush up to 30 birds from one clump.

Tyto novae-hollandiae. Masked Owl.

A pair of these birds nested at Deniliquin in January 1955, rearing two young. I did not see the species subsequently. It is possible the grasshopper plagues during that month may have brought this owl into the area.

Glossopsitta concinna. Musk-Lorikeet.

In October 1958 there was a small influx into the Finley area, flowering yellow box being the attraction.

Glossopsitta porphyrocephala. Purple-crowned Lorikeet.

In April 1958 two small parties were seen in mallee near Euston.

Kakatoë galerita. White Cockatoo.

An abundant bird along the Murray River, the Edwards River and its associated streams, the Darling River, and around Yanga and Condoulpe Lakes. It does not occur along the Billabong Creek although it is common along the Yanko around Morundah and along most of the Murrumbidgee River. It is confined to the red gums, particularly the larger forests such as Gulpa, Werai and Koondrook, but forages out into the cleared country for up to 20 miles. Breeding starts in August, and at this time birds are in pairs. Outside the breeding season very large flocks are formed which each contain several hundred birds. At night these flocks resort to thick timber to roost. The continuous, raucous screaming of the massed birds at such roosts is unbearable, although one must admit to the beauty of the birds as they wheel in great flocks above the tall gums, their white and yellow plumage tinted with the red of the setting sun.

Kakatoë leadbeateri. Pink Cockatoo.

This beautiful cockatoo is reasonably common in mallee country and in belar scrub. It is not found east of Moulamein. It occurs in small flocks which seldom exceed 30 birds in number.

Kakatoë sanguinea. Little Corella.

Restricted to red gum timber and the plains nearby, this species does not occur further east than Euston. West along the Murray River from this settlement it is reasonably common, becoming almost abundant along the lower Darling River. Occurs in flocks of up to 200 birds.

Kakatoë tenuirostris. Long-billed Corella.

Occurs in small numbers in the Gulpa Forest, Mathoura, in larger numbers in Werai Forest between Deniliquin and Moulamein, and in Koondrook Forest, near Barham, it is quite common in certain places. Locals are of the opinion that this Cockatoo leaves the area after breeding and, in support of this, I saw a flock of 200 birds flying west at Euston on January 29, 1957. All my records are between September and January. Total numbers are very small compared to those of the White Cockatoo, with which bird it often associates.

Kakatoë roseicapilla. Galah.

An abundant bird throughout the area, occurring in flocks many hundreds strong. Outside the breeding season, which is in September and October, these flocks feed on the open plains, and in late afternoon they fly in continuous streams to the red gum timber where they roost. *En route* they often give a preview of their evening display, flocks suddenly swooping from the sky, skimming the ground, sweeping up again, side-slipping and twisting in perfectly controlled flight. At the roosting sites, the display is intensified, great mobs of birds swishing

through the red gums at astounding speed, screaming excitedly, whilst the setting sun intensifies the rose colour of their plumage, a thrilling and beautiful spectacle that is a feature of this inland country. In the hot summer months, the young birds shelter in scrubby trees, "whining" continuously in a most irritating manner.

Leptolophus hollandicus. Cockatiel.

A summer visitor in variable numbers. Records are from September 20 to March 30, but usually all birds have left before mid-January. Except in very good seasons, such as in 1956, very few Cockatiels reach the far western areas. Although large numbers do occur in the east around Finley, Berrigan and Deniliquin, I am of the opinion that the main body of birds is to be found each year to the east of the area under review, that is, in the wheat-growing districts towards Wagga Wagga. Favours open, scrubby timber, particularly Murray pine.

Polytelis swainsonii. Superb Parrot.²

Fairly common in the Gulpa Forest, Mathoura, extending north along the Edwards River to Deniliquin. It nests in a number of places in this limited area, usually in October. In the winter months flocks of almost 100 birds may be seen in the forest feeding high in the red gums. At this season, too, the species becomes more widespread and has been recorded in small numbers at Wanganella and Jerilderie, whilst at Finley a few were seen on most days in May and June, often pausing to feed in sugar gums.

Polytelis anthopeplus. Regent-Parrot.

Found only west of Euston, occurring both in mallee country and in the red gums along the Murray. Even in my short term in the area I noticed an increase in numbers and the species can now be described as reasonably common.

Platycercus flaveolus. Yellow Rosella.¹⁸

A common bird along all the rivers and creeks where the red gum grows. Apart from odd birds lured into the open by fruiting African boxthorns and pepper trees, I have only one record away from this restricted habitat. At Dry Lake, Waldaira, some 5 miles from the Murray River, there is a small colony living in belar growing amongst mallee. The lake is fringed by dead trees, possibly red gums, and it is probable that when these were killed by prolonged drought or salting, the Rosellas took to the nearby mallee instead of retiring to the river. The Crimson Rosella (*P. elegans*) is said by locals to occur occasionally in the Tocumwal area but I never saw it there. However, an obvious cross between these two Rosellas was once seen near Tocumwal.

Platycercus eximius. Eastern Rosella.

Quite common in the east, it becomes progressively rarer to the west and I have no records west of Euston. It prefers the more luxuriant type of open forest country, favouring particularly yellow box country. Near Tocumwal, Mathoura and Barham, the species is almost abundant.

Barnardius barnardi. Ringneck Parrot.

Preferring dry, scrubby timber, this parrot does not extend far south of the Billabong Creek in the east, and even north of this boundary, from Urana to Moulamein, it is not particularly common. Westwards from Moulamein into the mallee it rapidly increases in numbers and soon becomes abundant. There is a small, discrete colony, some 12 miles east of Deniliquin in thick black box with some pine. Nests in October.

Psephotus haematonotus. Red-backed Parrot.

A common to abundant resident throughout the area, occurring in all lightly timbered country. Rare or absent in extensive eucalypt mallee, and in the denser parts of the red gum forests. Nests September and October.

***Psephotus varius*. Mulga-Parrot.**

The first patch of mallee 15 miles west of Moulamein is the easternmost point of this parrot's distribution in the area. Westwards, both in mallee and its belar and sugarwood associations, it is a fairly common bird, occurring usually in pairs, sometimes in small parties. Does not frequent open country.

***Psephotus haematogaster*. Blue Bonnet.**

This parrot is not found in the well-timbered red gum country south of the Edwards River or in eucalypt mallee. It is common, however, in all other lightly timbered country, particularly where pine, boree or buloke are the principal trees.

***Neophema chrysostoma*. Blue-winged Parrot.⁵**

This is a reasonably common winter visitor to the whole of the area. There are two distinct movements through the area, the first in late March and through April, the second from August to late October (last date October 16). Lesser numbers are present in the period between these two migrations, indicating that the area is only a part of the winter habitat of this parrot, many presumably travelling farther north. The saltbush plains and swamps surrounded by bluebush are the main localities favoured by this bird during its stay. I have seen odd *Neophema* parrots around Finley and Tocumwal in summer and am fairly certain these will prove to be Elegant Parrots (*N. elegans*) should anyone be able to obtain a good view of them.

***Melopsittacus undulatus*. Budgerygah.**

A summer visitor that appears in good seasons only. In dry years, such as 1957 and 1958, isolated small parties prospect the area but rapidly pass on. In good years, such as 1955 and 1956, countless thousands arrive and nesting is widespread. Lightly timbered country is the favoured habitat and the species is usually more abundant in the western part of the area. Birds usually arrive in the third week of September and have left by the second week in February. Odd birds may be seen outside these limits and in 1954 a flock of some 100 birds spent the whole winter in a paddock of millet near Wanganella.

***Podargus strigoides*. Tawny Frogmouth.**

A common resident in all timbered areas, at times appearing in towns to feed on moths below street lamps. Nests in October and November.

***Ægotheles cristata*. Owlet-Nightjar.**

Found in all timbered areas as a common resident, but preferring the more open, scrubby country. Nests in October.

***Eurystomus orientalis*. Dollar-bird.**

Seen only in the immediate vicinity of Tocumwal where it is a summer visitor to the partly cleared red gum country adjacent to the Murray River. It arrives in the latter part of October and departs during February.

***Alcyon azurea*. Azure Kingfisher.**

I have no records of this species west of the junction of the Murray and Murrumbidgee Rivers but east of this point it is a common resident on all rivers, creeks and associated waters. Does not visit swamps or isolated tanks but appears to be spreading along irrigation canals and channels.

***Dacelo gigas*. Laughing Kookaburra.**

A resident in all timbered country, being abundant in the red gums close to water but rare in the drier scrubs. Practically absent from mallee. There is a marked influx of birds in the winter months to the eastern part of the area, particularly along the Murray River where loose flocks of up to 20 birds may sometimes be seen.

Halcyon pyrrhopygius. Red-backed Kingfisher.

A summer visitor throughout the area, very rare in the eastern section where there are few suitable nesting sites available in the flat country, but becoming common in the mallee and further west where slightly undulating country and its resultant eroded gullies supply the required breeding habitat. In the east, the bird is usually confined to sandpits, but the miniature cliffs around Lake Urana are also favoured. Extreme dates are August 28 and March 23. Nests November to January.

Halcyon sanctus. Sacred Kingfisher.

A summer visitor to timbered country throughout the area but favouring the vicinity of water. The date of arrival and number of birds visiting is influenced by seasonal conditions. In the flood year of 1956, birds first appeared on August 10 and subsequently the species became most abundant, breeding in large numbers in the flood-affected country; the last bird was seen on April 1. In the drought year of 1957, the first bird was not seen until October 10; very few appeared subsequently; no breeding took place and all the birds had left the area by February 14. A single bird wintered at Yanga Lake in 1956 and in June 1957, a single bird was seen at Tocumwal.

Merops ornatus. Rainbow-bird.

Strictly a summer visitor with dates of arrival and departure that vary only by a day or two from year to year. The first bird arrives on the last two days of September and the last one departs on or just before March 22. The arriving migrants come in small parties, passing from north to south, and the main bulge of the population has spread throughout the area in a week. The departure is more casual and prolonged. Flocks of up to 200 birds form from late January and these frequent the rivers where they roost in compact mobs high in the red gums. In the mornings a slow drift of these flocks to the northwards may take place, but they soon find another suitable feeding spot to linger for a while. This is a common to abundant bird wherever sandy soil gives suitable breeding sites, provided there is a tree or two on which to perch.

Eurostopodus guttatus. Spotted Nightjar.

Confined to the mallee and its belar and sugarwood associations. It is an uncommon bird and may possibly be a summer visitor only, as, with one exception, all my records fall within the period October to March. However, it is an easily overlooked bird.

Hirundapus caudacutus. Spine-tailed Swift.

I have only three records of this bird. On February 25, 1957, a small party flew east at Wanganella; on March 9 and 10, 1958, small parties were moving east over Tocumwal and Jerilderie. On each occasion the birds were flying low with a purposeful, direct flight and without feeding.

Apus pacificus. Fork-tailed Swift.

On January 2, 1955, a thundery change broke a long spell of hot weather at Deniliquin. Ahead of this change and moving northwards came thousands of Fork-tailed Swifts, their excited screaming first drawing attention to them, high up under the storm-clouds. A few returned and drifted south in cloudless weather on February 20. In mid-March, 1956, small numbers were in the Finley and Tocumwal districts. I have no other records.

Cuculus pallidus. Pallid Cuckoo.

There is a marked movement of this species throughout the whole area in spring and early summer, commencing in August and petering out in early December, the peak being in September and October. All types of country are frequented at this time, even the treeless plains. The return takes place in March and April, but very few birds par-

icipate and the bulk of the northbound migrants must use a different route from that taken in spring. Boree trees, with their swarms of hairy caterpillars of the Bag Moth, are favoured during this movement. Some of these autumn migrants may stay over in the area as odd birds are to be seen throughout the winter months. A single record in January, near Deniliquin, suggests that some birds may remain to breed but I never saw any evidence of this.

Cacomantis pyrrhophanus. Fan-tailed Cuckoo.

I have no records of this cuckoo west of Moulamein. In the rest of the area it is an uncommon spring migrant, passing through from early August to mid-October. There is no evidence of an autumn return migration, but odd birds winter from May to July. On two occasions I have seen single birds in the Gulpa Forest, Mathoura, in November and early February, so there is a possibility that breeding may occur in that locality. The species favours the thicker timber.

Misocalius osculans. Black-eared Cuckoo.

A single bird was seen in boree country near Wanganella on August 7, 1956.

Chalcites basalis. Horsfield Bronze-Cuckoo.

This is the common cuckoo of the area. It is found in all lightly timbered localities but favours the bluebush and lignum swamps. Spring migrants start moving through in August and in most years many stay to breed. In the dry year of 1958 no birds stopped to breed and all migrants had passed through before October. The breeding population starts to move out in December and the exodus is completed in January. Birds start to appear again in mid-March and in years when the transitory swamps on the plains are full, considerable numbers may remain to winter throughout May and June. The wintering birds move out during July but this exodus becomes confused with the spring influx. Breeding commences in September and young birds have been seen just out of the nest in January. The various species of wrens are the usual hosts but young or eggs have been found in nests of the Red-capped Robin and the Eastern Whiteface.

Chalcites plagosus. Golden Bronze-Cuckoo.

A very rare migrant in the extreme eastern section of the area, possibly travelling along the Murray River, as the few records I have are close to that water. Odd pairs breed each year in the Gulpa Forest, Mathoura, close to a plantation of introduced pines. Young birds have been seen being fed by Buff-tailed Thornbills.

Hirundo neoxena. Welcome Swallow.

A common resident throughout the area. There is no evidence of an exodus in winter. Large flocks may be seen in autumn and winter, suggesting a passage movement and an additional wintering population. Considerable numbers still nest in traditional sites such as the hollow base of a red gum or under the leaning trunk of a wind-blown tree on the open plains. Nests August to November and sporadically in April.

Cheramoeca leucosterna. White-backed Swallow.

A rare bird in the eastern section of the area, nesting occasionally at Deniliquin, Wakool and Barham. There is a small colony at each locality. West of Euston, however, the species becomes common. Although individual colonies may be deserted after the breeding season, the species remains in the general area throughout the winter. Communal roosting in old nest-holes takes place at this season.

Hylochelidon nigricans. Australian Tree-Martin.

Common throughout the area, breeding in September and October. It is present throughout the year but there is a slight diminution in numbers during the winter. Flocks of many thousands of birds may be

seen at times, particularly from December to February. Such gatherings are a feature of the extensive reed-beds near Wanganella. Frequents both open and timbered country.

Hylochelidon ariel. Fairy Martin.

A common summer visitor to the whole of the area, arriving in the first week of August and departing between January and early March. One winter record of five birds at Moulamein on June 15, 1956. The numerous bridges over irrigation channels are much used by this species for nesting sites.

Rhipidura fuliginosa. Grey Fantail.

There is a small breeding population in Gulpa Forest, Mathoura, centred on the plantation of introduced pines, some ten or more pairs nesting there. Elsewhere, the species is a common winter visitor only, spreading throughout the area and into all types of habitat. It is common even in the far western section of the area. First birds appear in mid-March (earliest date 15th) and they start to return in August, the movement reaching a peak in early September with stragglers right to the end of October (last date 28th). The arrival is on a broad front and is composed of single birds or very small parties, but returning birds tend to concentrate into large, loose flocks of up to 200 birds. These flocks are frequent along the Murray River in the eastern section of the area and this river is a well-marked migratory route. It is probable that a large percentage of wintering birds originate near the head-waters of the Murray River.

Rhipidura leucophrys. Willie Wagtail.

A common resident throughout the area.

Myiagra rubecula. Leaden Flycatcher.

A very rare passage migrant through the extreme eastern part of the area. A pair nests each year near the pine plantation in the Gulpa Forest.

Seisura inquieta. Restless Flycatcher.

A fairly common resident throughout the area in timbered localities, including mallee. Some birds move into the area in winter, giving rise to a very slight increase in population. Nests September to November.

Microeca leucophaea. Jacky Winter.

This species requires fairly extensive tracts of timber and is therefore uncommon in many parts of the area. It is common, however, in the large red gum forests and throughout the mallee. It is apparently a resident as no migratory movements have been observed. Nests in October and November.

Petroica multicolor. Scarlet Robin.

A rather uncommon winter visitor to the closely-timbered localities in the eastern section. I have no records west of Moulamein and Barham. Usually singly or in pairs. Extreme dates are April 30 for arrival and August 12 for departure. Denser red gum along the rivers is the favoured haunt.

Petroica goodenovii. Red-capped Robin.

A resident throughout the area, somewhat rare in the east but common further west, particularly in mallee and belar. Prefers scrubby timber and is not often seen in red gum country. Nests September to January.

Petroica phoenicea. Flame Robin.

A common visitor during the winter months, frequenting open country and extending out on to the treeless plains. Has been seen as far west as Balranald and up to 45 miles north of that town. It is usually in flocks of up to 30 birds and records are from April 30 to September 8.

***Petroica cucullata*. Hooded Robin.**

A resident bird, common in most timbered areas west of Moulamein but rare to the east of that town and practically absent, apart from odd pairs, east of Deniliquin. Nests in October and November. Prefers the drier scrubs such as mallee, belar and pine.

***Pachycephala pectoralis*. Golden Whistler.**

A common winter visitor, records being between April 4 and October 13. Prefers the thicker timber, especially the red gum. The main concentration is to the east but odd birds have been seen as far west as Euston, where they frequent mallee.

***Pachycephala rufiventris*. Rufous Whistler.**

A common resident in timbered localities throughout the area, nesting in October and November. There is evidence of passage movements through the area in August and September, and again in March. There is a marked reduction in numbers in May and June when the bird becomes uncommon, especially in the mallee.

***Pachycephala inornata*. Gilbert Whistler.**

Keeping to the belar and sugarwood patches in mallee, this species is fairly common west of Euston. There is also a small population in a narrow strip of black box and lignum country extending through Caroonboon and Bundyulumbulah stations west of Wanganella. It is apparently resident. Nests in October.

***Colluricincla harmonica*. Grey Shrike-Thrush.**

A common resident throughout the area in all timbered localities, including the mallee. Nests October and November.

***Grallina cyanoleuca*. Magpie-Lark.**

A common resident throughout the area wherever there is reasonable access to water. Large flocks form at times adjacent to the Murray River. Nests September to November.

***Falcunculus frontatus*. Eastern Shrike-Tit.**

Strictly confined to the red gums, this species is a fairly common resident along the Murray River, the Edwards River and subsidiary streams, and up the Murrumbidgee River, from its junction with the Murray River, to Balranald. Not found along the Billabong Creek west of Jerilderie.

***Oreica gutturalis*. Crested Bellbird.**

This species does not occur east of the eastern boundary of the mallee near Moulamein. West of that point it is a common resident, occurring in mallee, belar and similar scrubs, and occasionally in stunted box scrub near the Murray River.

***Pteropodocys maxima*. Ground Cuckoo-Shrike.**

The movements of this bird are hard to understand. It appears to be uninfluenced by seasons or climatic conditions, occurring at any time of the year, in drought or flood. The country around Finley is well-favoured as are the plains north of Wanganella, but I have also seen the species in well-timbered scrub country along the Darling River. Nesting records are in October and November, old mud nests being utilized at times. Never common, it is usually in pairs or small family parties.

***Coracina novae-hollandiae*. Black-faced Cuckoo-Shrike.**

A common bird throughout the area. Marked passage movements take place in August/September and March/April, when flocks of 50 birds are not infrequent. Nesting takes place in October. There is a diminution in numbers during the winter months but the species remains common.

Coracina robusta. Little Cuckoo-Shrike.

This is a rare species in the area, despite the fact that casual visitors appear to have no difficulty in locating it. My few records all come from the red gums at various points along the length of the Murray River. I have two records in October but the remainder are in the winter months and I suspect the species is primarily a winter visitor to the area. I never found a nest.

Lalage sueurii. White-winged Triller.

A fairly common summer visitor to open-timbered localities throughout the area. It particularly favours pine country. Records from September 18 to February 10. Numbers of this species vary according to seasonal conditions.

Cinclosoma castanotum. Chestnut Quail-Thrush.

Strictly confined to the mallee areas where it is reasonably common and apparently resident.

Pomatostomus temporalis. Grey-crowned Babbler.

In the eastern section this is a common resident, occurring in open timber. Between Deniliquin and Moulamein the species rapidly diminishes in numbers. My western-most observation was at Kyalite in open mallee.

Pomatostomus superciliosus. White-browed Babbler.

The stronghold of this resident species is the mallee, where it is abundant. It is also common in belar and sugarwood scrubs, dense lignum and other scrub country, but becomes rare east of Moulamein. In this eastern section it occurs only in scattered colonies, usually in thick Murray pine, but it also penetrates deep into the red gum forests where clumps of saplings are the favoured habitat.

Pomatostomus ruficeps. Chestnut-crowned Babbler.

Inhabits similar country to the last species but is even rarer east of Moulamein, being there restricted to a narrow strip of old man saltbush country extending from Moulamein almost to Wanganella. Although the two species may occur in the same locality, the flocks do not mix.

Oreocincla lunulata. Australian Ground-Thrush.¹

Recorded on two occasions at Tocumwal and Deniliquin in July and August. Each time a pair was present in dense clumps of red gum saplings. Mr. Peter Disher of Barham noted a pair near that town and it is apparent that the species is a rare winter visitor to the eastern part of the area.

Epthianura albifrons. White-fronted Chat.

A common resident throughout the area, found in all open localities, particularly the vicinity of swamps or the saltbush plains. In winter very large flocks may form in saltbush areas and I have seen a flock near Wanganella containing well over a thousand birds. Nests August to December.

Epthianura tricolor. Crimson Chat.

During my stay in the area no irruption of this species occurred and I did not see the bird until a return trip in October 1959, when a pair was noted in black box timber close to Fletcher's Lake, Dareton.

Epthianura aurifrons. Orange Chat.

Sparingly distributed in all open, saltbush localities. It is usually not far from water, either a swamp or a stock tank. It is most common between Wanganella and Hay, and again west of Wentworth. In the winter months flocking takes place and at Wanganella I have seen a flock of over 40 birds. Males in these flocks seem to be in a form of eclipse plumage, lacking much of the normal brightness. According to

local people, this resident population is supplemented at times by the arrival of large flocks, but no such irruption occurred during my period in the area. Nests in October and November.

Gerygone fusca. Western Warbler.

Belying its name, I never recorded this bird far west of Moulamein, despite the fact that there is ample suitable habitat for it. Dry, scrubby timber, particularly open black box, is most favoured. It is not a common bird, the pairs being well scattered. In the winter months small flocks of about 10 birds are formed which move away from the dry summer habitat to the close vicinity of swamps and the box and cooba timber along the creeks. These flocks are easily overlooked as the birds are mostly silent, only occasionally a song being given. Nests in October and November, the male sitting close to the partly constructed nest singing continuously whilst the female does the work.

Smicrornis brevirostris. Brown Weebill.

A common resident in all timbered country other than the red gum areas, which it mostly avoids. The most abundant bird in the mallee. Nests during September to January and again in March should rains fall at that time.

Aphelocephala leucopsis. Eastern Whiteface.

A common resident throughout the area, occurring in open timber and in any form of scrubby vegetation. Nests September to November and sometimes in March. On the plains, nests are often built in blue-bush, lignum and similar cover.

Acanthiza lineata. Striated Thornbill.

A resident occurring only in the red gums along the Murray River to just west of Barham. Not very common but parties are frequently seen in the Gulpa and Koondrook Forests.

Acanthiza nana. Little Thornbill.

In the eastern section this is a common and widespread species occurring in all types of timbered country. It is common in the towns of Finley and Berrigan. Towards the west the species becomes less common and tends to concentrate into the black box scrub adjacent to the Murray River, not being found in mallee or other dry scrub. However it occurs to the west of Wentworth. The bird occurring in the area is noticeably paler than its coastal counterpart.

Acanthiza pusilla. Brown Thornbill.

There is a small resident population in the Gulpa Forest. The close vicinity of the extensive reedbed is the favoured habitat, the birds feeding almost entirely in the reeds. Not seen elsewhere.

Acanthiza hamiltoni. Red-tailed Thornbill.*

A somewhat rare resident of the mallee. About 4 miles west of Balranald was my easternmost record. It lacks the brown forehead of the previous species and has a different song. It apparently occurs only in pairs and has a noticeable habit of cocking its tail.

Acanthiza uropygialis. Chestnut-tailed Thornbill.

A very common resident throughout the area, avoiding only the red gum country. Dry, scrubby timber is the most favoured habitat and it is abundant in mallee. Nests in September and October.

Acanthiza reguloides. Buff-tailed Thornbill.

This is a common resident in timbered areas close to the Murray River to as far west as the Little Murray Forest, west of Barham, and along the Edwards River as far west as Werai Forest between Deniliquin and Moulamein. Nests September and October.

* This species is now classed as a subspecies of *A. pusilla*.—Ed.

Acanthiza chrysorrhoa. Yellow-tailed Thornbill.

A very common resident throughout the area in all timbered localities. Tends to avoid close mallee. Nests June to November.

Sericornis frontalis. White-browed Scrub-Wren.

A common resident in the Gulpa Forest, especially near the reedbed, and in the Little Murray Forest, west of Barham. There are odd pairs along the Murray River near Tocumwal but it does not occur elsewhere in the area and has not spread along the Edwards River to the highly suitable Werai Forest.

Pyrholaemus brunneus. Redthroat.

This is a common resident some 20 miles north of Balranald on the Ivanhoe Road, inhabiting old man saltbush and bluebush country. It is also common in cane grass and bluebush country west of Wentworth. Nests in July and August.

Cinchorhamphus cruralis. Brown Songlark.

A common bird inhabiting the open plains wherever there is rough grass or crops. It is particularly fond of the stunted saltbush. Numbers present are dependent on seasonal conditions. A few birds always remain during the winter, but when the saltbush plains are wet and the swamps are full there is an influx into the area and the saltbush seems to crawl with Songlarks. Such conditions prevailed in 1955 and 1956. In 1955 most of the summer birds left in March but during June thousands of birds flocked back to the Wanganella area. In 1956, wintering birds were even more widespread, numbers even being seen around swamps in the mallee near Balranald. Normally the breeding period is October to December, but following a winter visitation nests may be found in July.

Cinchorhamphus mathewsi. Rufous Songlark.

Apart from the fact that this species inhabits lightly timbered country instead of open plains, its movements follow closely those of the Brown Songlark. In the summer it is usually common except in the extreme western section where it is rare. In good seasons it is widespread, but in dry years it becomes restricted to the vicinity of the rivers. The wintering population is variable, there always being a few birds, but in wet seasons considerable numbers remain throughout the year. In 1956 most of the birds left during February but returned in force in April. Normally nests from October to December but sometimes as early as August.

Megalurus gramineus. Little Grassbird.

Found in all swampy areas, occasionally lingering in them long after the water has dried up. In flood years this bird becomes amazingly abundant and swarms in the transitory swamps on the open plains. Normally breeds about October but in the flood year 1956 breeding was continuous from April to December.

Acrocephalus australis. Australian Reed-Warbler.

A common summer visitor throughout the area wherever reedbeds occur. It also inhabits willows, bluebush and other water vegetation. On spring migration (August) it also occurs commonly in the bamboo clumps found in many gardens. The local population seems to leave in March and April and I have no records of the species in May. From June onwards the species is present in variable numbers, sometimes just odd birds, sometimes large assemblages. In June 1955, the extensive reedbeds at Wanganella were frequented by Reed-Warblers in numbers far in excess of the summer population. Nests September to December.

Malurus cyaneus. Superb Blue Wren.⁴

The Blue Wren appears to have spread west along the Murray River and also up the various tributaries. There is also another popula-

tion spreading east along the Murray River from the South Australian border. The two populations have not yet met although the western portion is extending its range rapidly and has reached Dareton. N. J. Favaloro of Mildura has told me that the spreading of this species along this section of the Murray River has taken place in the last 20 years, and he is of the opinion that the construction of locks, with the resultant permanent high level of water and consequent reed growth, is the cause of this. The eastern population has spread along the Edwards River with all its numerous offshoots and back up the Billabong Creek to as far as Wanganella but not as far as Jerilderie. The western boundary is near the junction with the Murrumbidgee River, along which it extends to as far as Maude but not to Hay. It does not extend far from the immediate vicinity of the rivers and it inhabits reedbeds, tussocky grass, lignum and bluebush. Nests August to January. In the snake-ridden red gum forests the nest is often built 6 feet or more from the ground.

Malurus melanotus. Black-backed Blue Wren.

Does not occur east of the mallee to which it is restricted. Inhabits mallee, dillon bush flats in the mallee and undergrowth in patches of belar. Nests September to November.

Malurus leuconotus. Blue-and-White Wren.⁴

Found commonly throughout the area where open plains have sufficient bushy cover. Does not normally occur in timbered areas and is particularly abundant on the saltbush plains between Wanganella and Hay. It is found only sparingly in the mallee, inhabiting the more extensive dillon-bush flats. In some places south of Deniliquin, from which area it is generally absent, this species has spread into lignum which has grown in cleared paddocks. At Finley, a pair has lived since 1957 in otherwise wrenless country, in thick vegetation at the night-soil depot, and in 1958 a pair took up residence in a small swamp at Tocumwal. These latter records suggest the species is extending its range. Nests September to November.

Malurus assimilis. Purple-backed Wren.

In the west this species is common in mallee, thick scrubby vegetation, lignum under the red gums, bluebush swamps, hop-bush covered sandridges, etc. In the east it becomes rare east of Wanganella and it is absent from the well-timbered country south of Deniliquin and the irrigation country eastwards to Finley and Berrigan. Nests about October.

Artamus leucorhynchus. White-breasted Wood-Swallow.

A summer visitor in small numbers, occurring throughout the area along the rivers and creeks. I know of only one exception to this habitat; at Tchelery a pair returns each year to a hop-bush covered sandhill. Pairs return to the same locality each year, nesting in the same tree and hawking insects from the same branch. Very regular in its arrival; over the five years the first bird being seen between September 20 and 22 and almost as regular in its departure, which takes place during the first two weeks of April. There is a tendency to flock at this time. One isolated record of a small flock at Berrigan on May 16, 1958. Nests October to November, usually in old Peewee nests.

Artamus personatus. Masked Wood-Swallow.

A summer visitor throughout the area, usually more abundant in the west, where it may outnumber the next species. In the east it is customarily in the minority, but in the dry year of 1957 numbers were about equal to those of the White-browed Wood-Swallow. Frequents open-timbered country. Extreme dates are September 16 and April 8.

Artamus superciliosus. White-browed Wood-Swallow.

A common summer visitor, usually outnumbering the previous species in the east. The earliest record is September 16 and most birds leave during April although a large flock was seen at Jerilderie on May 30, 1957.

Artamus cinereus. Black-faced Wood-Swallow.

A common resident in all open localities with a few trees or a telephone line to use as a feeding-perch. Nests September to January.

Artamus cyanopterus. Dusky Wood-Swallow.

In the summer it is fairly common and well distributed throughout the area, favouring the red gums and mallee. In the winter many birds leave the area and the ones remaining collect in flocks in the deepest recesses of the large red gum forests. Nests September to December.

Neositta chrysoptera. Orange-winged Sittella.

In May 1958, three flocks totalling some 60 birds moved into Mairjimmy Forest, a small reserve of black box between Berrigan and Jerilderie. This locality had been visited by me numerous times previously and the species not seen. In October 1958, no birds could be found, but in December, five were seen. This species was not seen elsewhere.

Neositta pileata. Black-capped Sittella.

A fairly common resident in belar timber in mallee country extending some 20 miles east of Balranald, to about Moulpa Siding. It will be seen there is a stretch of country about 120 miles wide separating the two Sittellas and also that they have differing habitat preferences. In 1954 I had a glimpse of a bird believed to be a Sittella in Deniliquin Forest (mostly black box) but repeated visits to this locality failed to reveal others. Many searches have been made of buloke country around Finley and Deniliquin but no Black-caps found, although the buloke is closely related to the belar.

Climacteris picumnus. Brown Tree-Creeper.

One of the commonest birds of the area, resident in all timbered areas irrespective of type and absent only from completely treeless localities. Nests August to November.

Climacteris leucophaea. White-throated Tree-Creeper.

A common resident in red gum along the Murray River to as far west as the Little Murray Forest, west of Barham, and also along the Edwards River through Deniliquin to the Werai Forest. Not observed away from red gums.

Climacteris affinis. White-browed Tree-Creeper.

A rare resident in the belar timber in mallee country and not seen east of Euston. The only locality where I found this species at all common was in the belar and sugarwood scrub between Buronga and Dareton.

Dicaeum hirundinaceum. Mistletoe-bird.

Common throughout the area, somewhat nomadic on a limited scale, following the different types of fruiting mistletoe. Nesting is also influenced by the times of fruiting. Nests are found in black box in September and October, and as late as February in applebush when its particular parasite bears fruit. The fruits of the introduced pepper tree are a great attraction.

Pardalotus punctatus. Spotted Pardalote.

In the main this is a winter visitor to the area from April to September. It occurs mostly along the Murray River, being quite common to Deniliquin but has also been seen at Jerilderie. I also have records of wintering birds around Dareton and on the edge of mallee near Euston. The presence of this species so far west seemed suspect, but H. Thomas, of Red Cliffs, has told me that he has specimens taken at Mildura and near Euston. Possibly they are South Australian birds following the Murray River. Records of single birds during the summer months at Tocumwal and Moulamein, and in the Gulpa Forest, suggest there is a small breeding population. Keeps mainly to the red gums.

***Pardalotus xanthopygus*. Yellow-tailed Pardalote.**

A common resident in the mallee to which it is strictly confined, never leaving the eucalypts for the adjacent belar and other timber. Nests in October and November.

***Pardalotus substriatus*. Striated Pardalote.**

A very common resident found in all timbered localities including mallee. A marked influx takes place to the eastern section during the winter months, when flocks of over 200 birds may be seen. Such flocks are more frequent in the red gums along the Murray River. Nests October to January, usually in holes in trees, but one pair that selected a crack in the wall of one of the Deniliquin lock-up cells gave much solace and amusement to the inmates. The possibility of *ornatus* occurring in the large winter flocks was not appreciated until late in my stay in the area. Only one or two opportunities then presented themselves for detailed examination, and although on these occasions the birds appeared to be *substriatus*, future observations could possibly show *ornatus* to be a winter visitor.

***Zosterops lateralis*. Silvereye.**

A resident species at the various citrus and vine settlements along the Murray River from Barooga to Wentworth. It seems to be strictly confined to the orchards or vines, seldom visiting the nearby towns except Mildura. There are a few pairs in Gulpa Forest, apparently the only locality where the species occurs in a truly natural habitat. The resident birds are pale coloured and totally different from the brightly coloured, tawny-sided birds that arrive in flocks in April and leave again in early September. These flocks range as far west as Balranald and keep mostly to the town areas and gardens around station homesteads. Occasionally a flock may visit a bluebush or lignum swamp.

***Melithreptus gularis*. Black-chinned Honeyeater.**

An uncommon resident in the red gums along the Murray River to as far west as the Gulpa Forest. Usually in parties of up to 6 birds.

***Melithreptus brevirostris*. Brown-headed Honeyeater.**

A common resident throughout the area, favouring mostly scrubby black box and mallee. Forms flocks in the winter months which may be found in any type of country including dense red gum and reedbeds. Normally nests October to December but has been found nesting in April following heavy rains.

***Plectorhyncha lanceolata*. Striped Honeyeater.**

A common resident in all scrubby timber of the western section and northern parts of the eastern section. It is absent from the red gum country south of Deniliquin (except for a small colony at "Arrawatta", ten miles south-east of Deniliquin) and the Finley/Berrigan irrigation areas. Favours belar and the fringes of black box along the creeks, but is found in all dry, open timber. Nests October to January.

***Myzomela nigra*. Black Honeyeater.¹¹**

Apart from a large scale irruption in 1957, when it was widespread and abundant throughout the area, I have only two records of odd birds, in the Werai Forest and at Dareton, both in spring.

***Gliciphila albifrons*. White-fronted Honeyeater.**

This species has a patchy distribution in the mallee, favouring localities with an undergrowth of bushes. My eastern-most record is for a few birds on a sandhill at Windouran Station east of Moulamein. It is fond of feeding on the flowers of the various *Eremophila* that grow in belar country. On August 23, 1958, a well-marked easterly movement was seen across the treeless "desert" country west of Wentworth. Parties were passing continuously, pausing to feed awhile on the flowering wild tobacco (*Nicotiana glauca*), the only plant of any height for many miles. Not recorded in June and July.

Grantiella picta. Painted Honeyeater.

Each December, good numbers visit an area of boree country south of Wanganella, nest, and depart in April. Many of the borees are heavily infested with mistletoe. I have no other records of this species.

Certhionyx variegatus. Pied Honeyeater.

A pair seen feeding on mistletoe berries in boree, just north of Yanko Creek, Jerilderie, on February 24, 1957. When disturbed they mounted high in the air and flew northwards.

Meliphaga virescens. Singing Honeyeater.

Apart from a few birds in the bushy areas of the mallee, this is a bird of the open plains. Clumps of boree; bluebush around a swamp; a strip of wild tobacco around a dry lake; dillon bush hummocks on a claypan; such are the inhospitable spots selected by this hardy species. East of Moulamein it does not extend south of the Billabong Creek. A resident bird, nesting from October to December.

Meliphaga leucotis. White-eared Honeyeater.

A common resident in eucalypt mallee. Nests in October and November.

Meliphaga cratitia. Purple-gaped Honeyeater.

Between May and August 1958, this species was fairly common in the mallee between Euston and Buronga. At the same time it was also common on the Victorian side of the Murray River near Hattah, a locality much frequented by bird observers, but a locality in which the species had not previously been recorded.

Meliphaga ornata. Yellow-plumed Honeyeater.

A common bird in the mallee and strictly confined to the eucalypts. Seems to be distributed in extensive colonies which move through the mallee areas in an unpredictable manner, but I believe the movements are only local. Nests in October and November and again in February and March should there be autumnal rains.

Meliphaga penicillata. White-plumed Honeyeater.

The commonest bird of the area. Tremendous numbers inhabit the red gum country which is its main stronghold, and which it pugnaciously holds against all comers. Lesser numbers are found in other timbered areas, providing water is close by. Much time is spent in drinking and bathing, the latter action being executed from a branch overhanging the water, the bird dropping quickly and dipping itself, then speeding back to the perch to shake and preen. If it is possible, the numbers in the red gums are increased in winter and at this season the species overflows into any type of country—barren plain, saltbush or mallee. Nests from August to December.

Meliornis novae-hollandiae. Yellow-winged Honeyeater.

A single bird in mallee 20 miles west of Euston on June 7, 1958. This can only be regarded as an isolated occurrence brought about by drought conditions which caused many unusual movements of honeyeaters in Victoria, including the irruption of the Purple-gaped Honeyeaters.

Myzantha melanocephala. Noisy Miner.

Common and widespread in the eastern section, this species gradually withdraws to the red gums along the rivers as one travels west. In the west the line of demarcation between this and the next species is well-defined; the Yellow-throated to the dry country, the Noisy to the watered. In the east the situation is not so simple, as although the Yellow-throated does not extend far south of the Billabong Creek and is absent from the well-timbered country south of Deniliquin and the Finley/Berrigan/Tocumwal area, the Noisy does extend into the dry country, and both species will inhabit and breed in the same locality.

This is particularly noticeable at Wanganella and Moulamein. However, although they may be nesting in the same clump of boree or the same strip of black box, there is no intermingling of the flocks of the different species and certainly no interbreeding.

Myzantha flavigula. Yellow-throated Miner.

A line from Urana, through Jerilderie and Wanganella, to Moulamein would mark the southern limit of this species in the east. West of Moulamein it is widespread and common, both in mallee and open country, being absent only from the red gums along the rivers, the domain of the Noisy Miner. A common resident, breeding, like the last species, from August to November.

Myzantha obscura. Dusky Miner.

On February 4, 1956, two were seen in mallee west of Euston, a locality only a few miles from Hattah, Victoria, where the species is common. Apparently the Murray River and its different vegetation border is an almost effective barrier.

Anthochaera carunculata. Red Wattle-bird.

A fairly common resident in the mallee to which it is apparently confined, keeping to the eucalypts.

Acanthagenys rufogularis. Spiny-cheeked Honeyeater.

A common resident with a distribution similar to that of the Striped Honeyeater, except that in the east it is confined to the country north of the Billabong Creek, apart from the boree country south of Wanganella. Nests mainly in October but will continue through to February if regular rains fall.

Entomyzon cyanotis. Blue-faced Honeyeater.

Apart from a few pairs around Finley this species keeps to the red gums, preferring the larger trees with open grassland underneath. It occurs the whole length of the Murray River, along the Edwards River and associated streams, along the Murrumbidgee River and around Lakes Yanga and Benanee. It is a resident species nesting from August to October, a favourite nesting site being amongst the bark debris collected in forks of trees, but babblers' nests are also used, and once I saw a typical honeyeater's nest of the suspended type.

Philemon corniculatus. Noisy Friar-bird.

A summer visitor to the eastern section, arriving in September and departing in February. It frequents the more extensive red gum areas, particularly the Gulpa, Werai and Koondrook Forests. Although a party of over 30 birds was once seen feeding on the fruits of jointed cherry (*Exocarpos aphyllus*) it is an uncommon bird.

Philemon citreognularis. Little Friar-bird.

A common summer visitor to the whole area, frequenting mostly the red gums and occasionally black box along the creeks. Migrant birds occur in all types of country. It arrives in September and departs in March with stragglers to April. There was a small party at Lake Urana in June 1957, the only winter record.

Anthus australis. Pipit.

A common resident throughout the area in all open grassed localities and in the saltbush. Nests August to November.

Mirafra javanica. Horsfield Bushlark.

This species frequents the saltbush plains, areas of coarse, tussocky grass, the dense vegetation in dried-up swamps and wheat and barley crops. My western-most recording of this bird in any numbers was a few miles east of Balranald, but a single bird was at Fletcher's Lake, Dareton, on March 28, 1960. It is a bird prone to sudden movements and flockings with no semblance of regularity. In March 1955 many hundreds were concentrated on grass plains north of Conargo. The

plains were flooded after heavy, local rain. In June 1955 flocks were watched flying into the Wanganella area from the north. Countless thousands were to be seen in the saltbush and in thickly grassed paddocks along the Billabong Creek, birds flushing ahead of me like a plague of grasshoppers. In 1957, as the drought intensified, Bushlarks deserted the area and were absent until September 1958, when almost overnight hundreds appeared in the Finley district and nested in the barley crops. Such movements are typical of the unpredictable Bushlark. Nests October to January.

Zonaegeinthus guttatus. Diamond-Firetail.

A resident species occurring as far west as Euston. It occupies all types of timbered country, including mallee, but is only at all common in the red gums. Occasionally seen in flocks of up to 40 birds. Nests October to December.

Taeniopygia castanotis. Zebra Finch.

A common resident species, being particularly abundant in some parts of the Finley district, on the plains north of Wanganella, and around the vines of the Coomealla Irrigation District, Dareton. The proximity of water is necessary. Nests in every month except June and July.

Aegintha temporalis. Red-browed Finch.

In September 1956, small parties appeared in the Finley, Tocumwal and Deniliquin districts. They had probably been lured west of their normal range by the exceptional conditions following the floods.

Oriolus sagittatus. Olive-backed Oriole.

A summer visitor to a limited part of the area, along the Murray River in the vicinity of Tocumwal. Arrives in October and leaves in February.

Struthidea cinerea. Apostle-bird.

This bird seems to be influenced by the presence of the Murray pine and is seldom seen in localities where this tree does not grow. It is particularly common in the Finley and Berrigan districts and westwards to Deniliquin. From about Moulamein to west of Balranald the bird is either absent or extremely rare, as I never recorded it in the area despite the presence of suitable pine country. There are Apostle-birds in scattered pine clumps in the mallee between Balranald and Euston. West of Euston, the bird seems to lose its dependence on the pine and is found in belar and sugarwood timber. In such country north of Dareton I once saw a flock of nearly 50 birds, the largest in my experience anywhere.

Chlamydera maculata. Spotted Bower-bird.

I received well-authenticated reports of this bird from Moulamein, west of Barham, and Euston. Good descriptions were given both of the birds and the bowers. However, I never saw the bird in the area and each time I visited the localities where it had been seen, the lignum, which it apparently inhabits, was either under or just emerged from floodwaters. My informants agreed that the bird is becoming very rare, it having been much more common in the past.

Corvus coronoides. Raven.

A common resident throughout the area in all types of country. Flocks of 300 birds or more are not uncommon. Nests August to November.

Corvus bennetti. Little Crow.

This bird is fairly common on the open plains where it inhabits the strips of timber along the creeks and the occasional clumps of belar and other timber. It is also common throughout the mallee. At times substantial flocks occur along the edge of flood waters or around paddocks where there are numbers of pigs. In times of grasshopper

plagues these flocks reach a very large size and in 1955 flocks of over 2,000 birds were seen near Berrigan and Deniliquin feeding on the insect swarms. Visitors to the area are usually unable to identify this bird. It is smaller in size than the Raven, neater in appearance, more dapper looking; the bill is shorter and less stout and this gives the forehead a higher appearance than in the Raven which has a "sloped" or receding forehead; the call is quieter and shorter, a cut-off "car"; seen flying overhead the underwing shows more whitish, a more two-toned appearance; it is an amazingly tame bird. Nests July to October. At Wentworth, I once threw a branch at a nest that was placed low in a mallee to make the sitting bird fly. Reluctantly it left the nest, flew to the next (and only other) tree, watched me as I sat under the nest-tree, then flew back to its nest, a clear indication of this species' tameness.

Corcorax melanorhamphus. White-winged Chough.

A common resident in all timbered localities throughout the area. Nests September to December, but many also nested in May 1956, the big flood year.

Strepera graculina. Pied Currawong.

A regular winter visitor to the eastern section, most towns having their flock, and flocks also occur throughout the red gums. Reaches as far west as Barham on the Murray River and as far west as the Werai Forest on the Edwards River. Flocks usually number about 30 birds and arrive in early May, leaving about the third week of September.

Strepera melanoptera. Black-winged Currawong.

A common resident throughout the mallee. Usually in pairs but in the winter small flocks occur which may leave the mallee and visit black box and tea-tree areas, close to the mallee. Nests in October.

Cracticus nigrogularis. Pied Butcher-bird.

Found in all lightly timbered areas where it is a common resident, nesting in October.

Cracticus torquatus. Grey Butcher-bird.

Not very common in the east, occurring only in the more extensive patches of pine or black box. It does not inhabit the red gum areas except in isolated instances. In the mallee and associated belar and sugarwood scrub, however, it is very common. It is a resident species nesting September to November. There is little evidence of an exodus in winter or of any passage movements.

Gymnorhina tibicen. Black-backed Magpie.

A very common resident throughout the area, nesting September to October.

Gymnorhina hypoleuca. White-backed Magpie.

Odd birds of this species occur throughout the area. Some are resident but there seems to be a tendency for more to be seen in the winter months, suggesting a northward movement from the normal range of this bird which is not many miles south of the area under review.

INTRODUCED SPECIES

Passer domesticus. House Sparrow.^{3 14}

A common bird throughout the area, occurring regularly in "bush" areas far from human habitations, as well as in the towns and around homesteads. Nests October to January.

Passer montanus. Tree Sparrow.^{0 7 9}

During my period in the area this species established itself in Tocumwal and Moama and is increasing. In northern Victorian towns, such as Cobram and Shepparton, this bird rivals the House Sparrow in numbers.

Carduelis carduelis. Goldfinch.

A common bird in all areas, reaching out into some of the most arid "desert" localities north of Balranald and west of Wentworth.

Sturnus vulgaris. Starling.

An abundant bird throughout the area, but especially in the irrigation areas around Finley and Dareton, and on the saltbush plains, where every mob of sheep has its accompanying Starling flock.

Turdus merula. Blackbird.

A very recent addition to the local avifauna and one which has pushed ahead with its colonization at an exceedingly rapid pace. In 1942, A. R. McGill did not see the species in Deniliquin. In 1954 there was one pair, possibly a second. In 1959 it was one of the commonest birds in the town. In 1957 the first bird appeared at Dareton. In 1959 a casual car drive through part of the irrigation settlement produced 8 birds. The bird now extends along the Murray River wherever there are citrus orchards. It is at Barooga, Tocumwal, Mathoura, Tooleybuc, Goodnight and all the New South Wales parts of the Sunraysia (Mildura) district. Except at Deniliquin it has not colonized the towns, keeping strictly to the orange groves, seldom extending even into the adjacent vines. Odd birds have appeared at Finley but have passed on in their quest for the oranges.

Pavo cristatus. Common Peafowl.

Some landholders in the Finley and Deniliquin districts keep this bird in semi-captivity. One man who started with two pairs, now has a flock of 150 birds ranging his paddocks. Successful breeding usually depends on the farm dogs keeping the foxes away and it is doubtful if the species could establish itself in a feral state. Nevertheless it is trying to do so and I have a number of records of this bird far from any homestead.

EARLIER DISTRIBUTION NOTES

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Indian Turtle dove Extends Range in South Australia.—During the past quarter of a century the Indian Turtle dove (*Streptopelia chinensis*) has established itself over a large part of the Adelaide Plains and in the Mount Lofty Ranges north to Clare. It is now a familiar bird in the townships of the Barossa Valley. In most places it is more conspicuous and better known than the native Peaceful Dove (*Geopelia placida*).

A remarkable accidental occurrence of the species came to my notice recently when an adult male appeared at the homestead, Erdora Farm, east of Sutherlands, S.A., on the morning of October 4, 1960, and was secured to check the identification. The bird was wary and behaved as a normal wild individual. Possibly, the good season assisted the vagrant in its wanderings in an otherwise unfavourable environment.—E. F. BOEHM, Sutherlands, S.A., 6/10/60.