

Records of the Western Australian Museum
Supplement No. 28

BIRDS OF THE SWAN COASTAL PLAIN and adjacent seas and islands



G.M. Storr and R.E. Johnstone

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TABLE OF CONTENTS

	Page
Abstract	7
Introduction	7
Annotated List of Birds	11
Discussion	74
References	76

ABSTRACT

This paper consists mainly of an annotated list of the 311 species of birds reliably recorded from the region, which lies along the lower west coast of Western Australia between lat. 31° and 33° 45'S. Information is given on status, abundance, habitat, breeding and movements. The discussion summarises the changes in status following massive environmental change in this, the most heavily populated part of the State.

INTRODUCTION

The region is bounded in the north by Lancelin I. and the Moore River, in the east by the Dandaragan Plateau and Darling Scarp, in the south by the Whicher Scarp and Leeuwin-Naturaliste Ridge and in the west by the continental shelf. It thus covers much the same latitudinal range as the Swan River District of W.B. Alexander (1921) and D.L. Serventy (1948) and the Darling System (System 6) of the Conservation through Reserves Committee (C.T. Porter 1981), but differs from all three in excluding the Darling Range. This region is part of the South-West Land Division; a paper is being prepared on the birds of this division, the last in a series of divisional avifaunas.

The climate is subhumid to humid, maritime Mediterranean, i.e. mean annual rainfall ranges from c. 60 cm in the north to 100 in the south, most of it falling from late April to early October; frosts are rare. Apart from wetlands the region is divisible into three longitudinal zones: the western, central and eastern, which are approximately equivalent to the Limestone, Sand and Clay Zones of D.L. Serventy (1948).

The western zone includes the islands and that part of the mainland in which aeolian limestone outcrops or lies beneath the sands of the Quindalup, Cottesloe and Karrakatta Dune Systems. The seaward dunes or hills are sparsely covered with tussock grasses, sedges and low shrubs. Inland, with increasing protection from the prevailing south-westerlies, the shrubland becomes denser and more diversified. The climax vegetation is a forest or woodland of tuart *Eucalyptus gomphocephala*, under which grow low trees and tall shrubs, especially peppermint *Agonis flexuosa*. A considerable part of the zone is preserved, notably on the islands and in the Yanchep, Neerabup and Yalgorup National Parks.

The central zone comprises the siliceous sandplains and ridges of the Bassendean Dune System. The vegetation is dominated by shrubs and low trees, especially *Banksia attenuata* and *B. menziesii* and stunted jarrah *Eucalyptus marginata*. Most of Perth and its suburbs lie within this zone. Some of the land has been cleared for plantations of *Pinus pinaster*. Except in the north (Moore River National Park and proposed Yeal Nature Reserve) little of the zone has been preserved.

The eastern zone consists largely of the clays and loams of the Pinjarra Plain. Originally the vegetation on well-drained soils was a forest of jarrah *Eucalyptus marginata* and marri *E. calophylla* with shrubby understory. Poorly drained soils, tending to be submerged in winter, were dominated by sedges and thickets of moderately tall shrubs. This is by far the most fertile zone, and consequently nearly all of it has been cleared.

The more important streams crossing the coastal plain are the Moore River, Gingin Brook, and the Swan, Canning, Serpentine, Murray, Harvey, Collie, Preston and Vasse Rivers. The lower valleys of some of these rivers have been drowned, resulting in the broad waters of the Swan Estuary, Peel Inlet, and the Harvey, Leschenault, Wonnerup and Vasse Estuaries. These and the numerous swamps and lakes (fresh and salt) are the home of many waterfowl and shorebirds. The only offshore wetlands are the saltlakes of Rottneest Island. The vegetation fringing or covering many of the wetlands, especially the woodlands of flooded gum *Eucalyptus rudis*, scrubs and thickets of *Melaleuca* spp. and beds of *Typha*, *Baumea* and other rushes and sedges, are important habitats in their own right.

For further details on the vegetation see J.S. Beard (1980). Our Swan Coastal Plain corresponds to his Drummond Subdistrict of the Darling District, less a small area north of lat. 31° S.

The classification and sequence of the annotated list is largely that of our field guide (Storr and Johnstone 1985). In this list we summarise for each species knowledge of its ecological status, relative abundance, habitat preferences, breeding season (defined by the month in which eggs are laid), clutch or brood size expressed as C/4(3) and B/5(1) when, for example, we have three records of four-egg clutches and one of a brood of five out of the nest but still dependent, movements and historic changes in status and abundance.

The data for the list came from the collections of the Western Australian Museum, the literature (not only the books and papers cited under references but also many notes in periodical journals and newsletters, notably the *Emu*, the *Western Australian Naturalist* and the RAOU's *Western Australian Bird Notes*), and the unpublished observations of many naturalists, especially J.R. Ford, G.M. Storr, R.E. Johnstone, N. Kolichis, R.P. Jaensch, G. Harold, G. Barron, G.J. Roberts, D.A. Saunders, J.N. Dunlop, P.J. Fuller, R.P. McMillan, P. Griffin, R.H. Stranger, A. Chapman, B. and A. Goodale, I. Edgar, L.A. Smith, O. Mueller and J.R. White.

We are grateful to the many people who provided us with notes, and to J. Dell and R.P. Jaensch for reading the manuscript.

We dedicate this paper to the memory of Julian Ralph Ford (1932-1987).

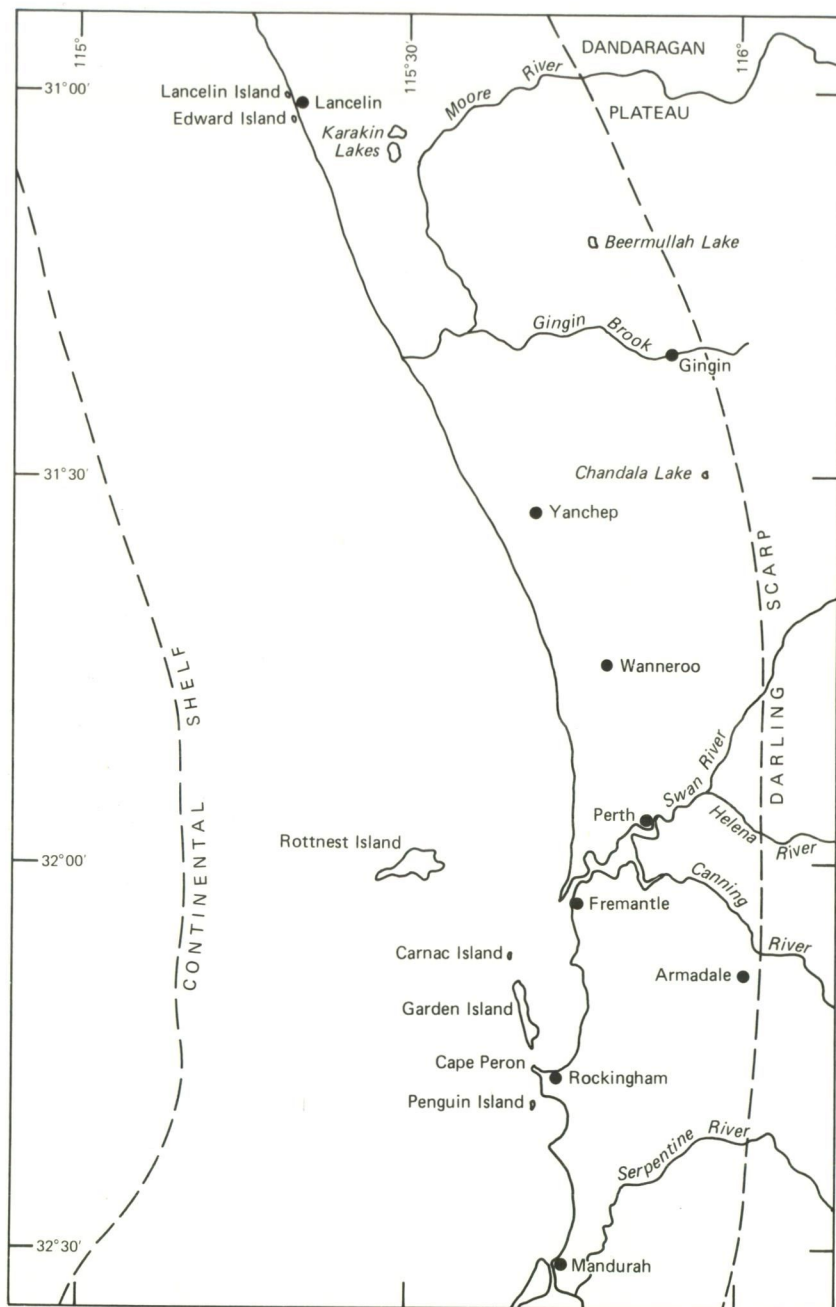


Figure 1 Map of northern half of Swan Coastal Plain.

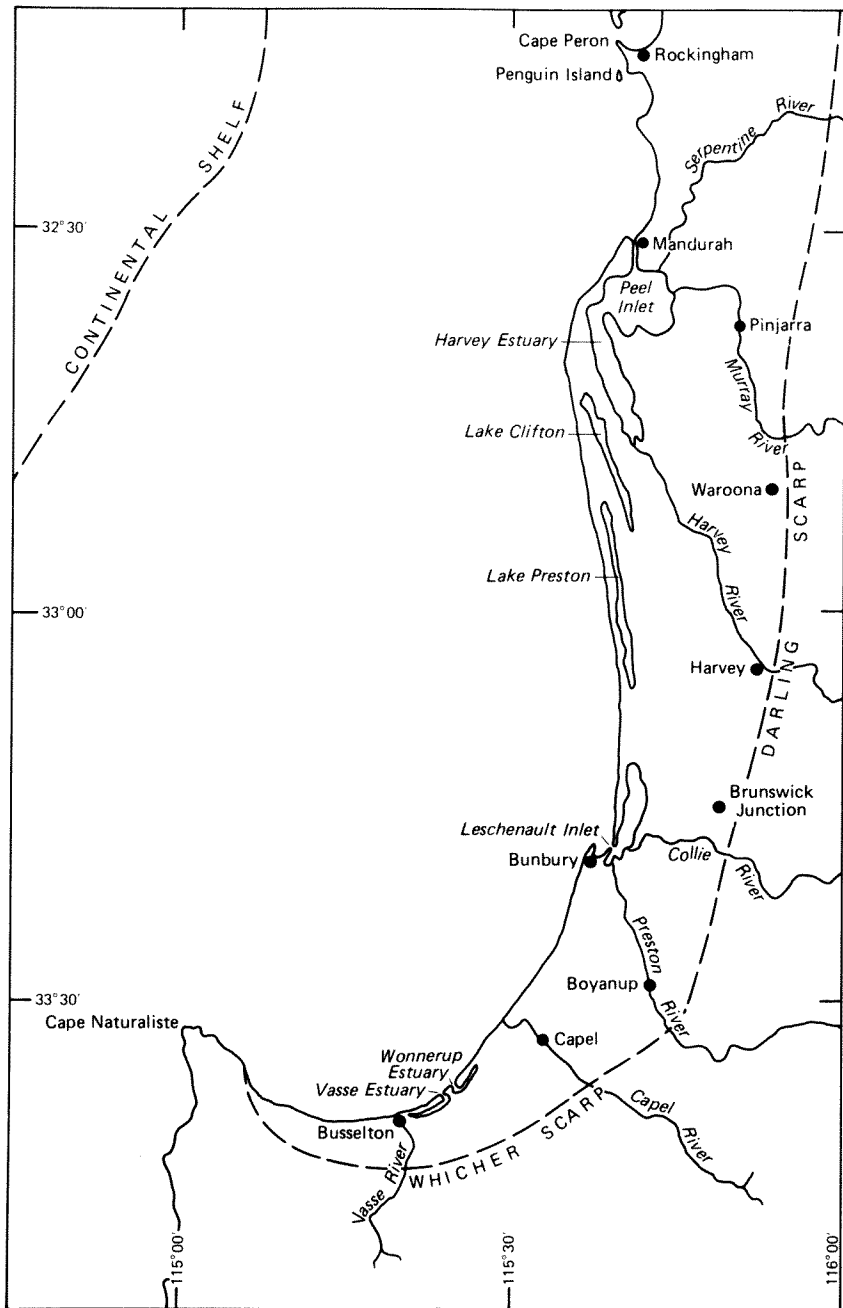


Figure 2 Map of southern half of Swan Coastal Plain.

ANNOTATED LIST OF BIRDS

Casuariidae

Dromaius novaehollandiae (Latham)

Emu

Range. Formerly throughout the mainland, but now extinct south of Mullaloo, Melaleuca Park and Warbrook, except in part of coastal strip between Mandurah and Bunbury (Dawesville to Kemerton). It survived in bushland south of Belmont until c. 1925.

Status etc. Moderately common; in ones, twos or family parties. Mainly shrublands (banksia scrubs, *Xanthorrhoea* and other heathlands, coastal-dune scrubs and *Eucalyptus foecunda* mallee); also eucalypt forests and woodlands; occasionally wandering to farmlands. Breeding in June; C/10(1), B/12(1).

Podicipedidae

Podiceps novaehollandiae novaehollandiae Stephens

Black-throated Grebe

Range. Throughout the mainland.

Status etc. Common; in ones, twos or loose aggregations (up to 150). Open fresh waters of all sizes, but preferring the smaller bodies, including dams, drains and ornamental pools. Breeding on fresh waters from late July to early March (mostly September-January); C/3(2), 4(3), 5(4).

Podiceps poliocephalus Jardine and Selby

Hoary-headed Grebe

Range. Throughout the mainland. Casual on Rottneest I. (Garden and Government House Lakes).

Status etc. Common; in ones, twos or small flocks, also aggregations of many hundreds (occasionally thousands) in autumn-winter. Mainly larger bodies of fresh water; also flocking from March to September on salt waters, including the Swan, Peel and Vasse estuaries and Lakes Guraga, Beermullah, Walyungup, Clifton and Preston. Breeding on fresh waters from late July to early February; C/2(2), 3(4), 4(4).

Podiceps cristatus australis Gould

Great Crested Grebe

Range. Throughout the mainland.

Status etc. Uncommon; in ones, twos or small parties, occasionally flocks (up to 40). Larger bodies of water (fresh or salt); occasionally visiting estuaries in autumn-winter. Breeding on fresh or brackish waters; October-December; C/5(1).

Spheniscidae

Aptenodytes patagonicus Miller

King Penguin

Very rare visitor. One came ashore on beach 6 km W Busselton on 8 September 1979 (B.K. Masters). It was sent to the South Perth Zoo, which later gave it to the Singapore Zoo.

[*Pygoscelis adeliae* (Hombron and Jacquinot)

Adelie Penguin

A bird found alive on beach at Cottesloe in March 1937 was possibly released at nearby Fremantle by a returning Japanese whaling ship (Whittell 1937, *Emu* 37: 65). It is highly improbable that this Antarctic species would willingly swim to subtropical seas.]

Eudyptes chrysolome moseleyi Mathews and Iredale

Rockhopper Penguin

Scarce visitor (mainly immatures in June-August, also January-February) to islands and mainland coast, north to lat. 32° S (Rottneest I.).

Eudyptes pachyrhynchus Gray

Thick-billed Penguin

Rare winter visitor to mainland coast north to lat. 32° S (Scarborough).

Eudyptula minor novaehollandiae (Stephens)

Little Penguin

Moderately common visitor to breeding islands and their immediate vicinity. After moulting (December-January) dispersing, but seldom reported north of Carnac I. (a few records from Rottneest I.). Breeding on Penguin I. (c. 500 pairs) and Carnac I. (c. 150 pairs) and in much smaller numbers on Bird, Seal and Shag Is: April-November; C/1(3), 2(33), 3(2); some pairs producing two or three broods (S. Chape). For weight and bill length in this population see Klomp and Wooller (in press).

Diomedidae

Diomedea exulans Linnaeus

Wandering Albatross

Scarce to uncommon visitor (January-November, mostly July-August) to continental seas; usually single, occasionally in twos or threes. A nestling banded on Bird I., South Georgia, was recovered near Fremantle. [Much more plentiful west of continental shelf.]

Diomedea epomophora epomophora Lesson

Royal Albatross

Very rare visitor. A nestling banded on Campbell I. on 18 September 1985 was recovered at Ledge Point on 5 March 1966 (*Aust. Bd Bander* 4: 80, 1966).

Diomedea melanophrys melanophrys Temminck Black-browed Albatross

Uncommon visitor (January-October, mostly winter); usually single. Attracted to offal from fishing boats at Mandurah (R.H. Stranger). An adult banded on Kerguelen was recovered at Breton Bay (Weimerskirch *et al.* 1985, *Emu* 85: 32), and a nestling banded on Bird I., South Georgia, was recovered near Fremantle (W.R. Phillips).

Diomedea chrysostoma Forster Grey-headed Albatross

No observations at sea, all records being of beach derelicts in March-September, mostly June-July.

Diomedea chlororhynchos bassi Mathews Yellow-nosed Albatross

Moderately common to common visitor (mid-April to early November); usually single but commonly in small parties. Attracted to offal from fishing boats at Mandurah (R.H. Stranger). Most birds in these seas are immature, in contrast to seas west of continental shelf and off south coast. An adult banded on Amsterdam I. was recovered on Rottnest I. (Weimerskirch *et al.* 1985, *Emu* 85: 26).

Diomedea cauta cauta Gould Shy Albatross

Scarce visitor (June-October) to continental seas [possibly more plentiful west of continental shelf]. A nestling banded on Albatross I., Tas., on 25 March 1985, was found dead at Busselton in mid-July 1985 (*Corella* 10: 66, 1986).

Phoebetria fusca (Hilsenberg) Sooty Albatross

Accidental. Only known from four specimens in Western Australian Museum, found at Mullaloo, West Perth, Leighton and Mandurah after storms in May and June.

Phoebetria palpebrata (Forster) Grey-mantled Albatross

Accidental. One (WAM A12891) found dead at Busselton on 2 June 1974.

Procellariidae

Macronectes giganteus (Gmelin) Southern Giant Petrel

Common visitor (late May to September); usually single. Attending fishing boats off Mandurah (R.H. Stranger). Frequently found dead or dying on mainland and island coasts after winter storms, less frequently inland (Pelican Point, Murdoch, Ravenswood, Australind, Capel). Recoveries of banded birds include many from Signy I. (South Orkneys), a few from Possession I. (Crozetts) and Belling-

hausen Station and Elephant I. (South Shetlands), and one from Marion I.; all were birds of the year.

Macronectes halli Mathews Northern Giant Petrel

Uncommon visitor (June-September). Recoveries of banded birds include two from Macquarie I. and one from Bird I. (South Georgia).

Fulmarus glacialisoides (Smith) Southern Fulmar

No observations at sea. Only known from nine birds found dead or dying on beaches from June to September.

Daption capense (Linnaeus) Cape Petrel

Common visitor (late May to early October); usually single, sometimes in small parties (up to 7). Occasionally following ships and fishing boats.

Pterodroma macroptera macroptera (Smith) Great-winged Petrel

No observations in continental seas, but occasionally found on beaches and inland (Bullsbrook) after storms from mid-June to November.

Pterodroma macroptera gouldi (Hutton)

Vagrant. A specimen (WAM A19561) found dead at Busselton on 26 April 1985.

Pterodroma lessonii (Garnot) White-headed Petrel

No observations at sea, but frequently found dead after winter storms (May-September) on beaches and inland (Morley, Shenton Park, Victoria Park, Palmyra, Gosnells, Baldivis).

Pterodroma brevirostris (Lesson) Kerguelen Petrel

No observations at sea, but frequently found dead or dying after winter and equinoctial gales (late May to early October) on beaches and inland (Yanchep; Kelmscott, Armadale). It was commonly found derelict during the wreck of Blue Petrels in early August 1984.

Pterodroma mollis (Gould) Soft-plumaged Petrel

No observations in continental seas, but fairly frequently found dead or injured on beaches after equinoctial and winter storms (late March to early September).

[*Pterodroma barau* (Jouanin)

Barau's Petrel

Possibly a rare visitor. One reported on 22 March 1987 'well west of Fremantle' in c. 31°S, 111°E (Ross 1987, *RAOU Newsl.* No. 72: 7).]

Halobaena caerulea (Gmelin)

Blue Petrel

No observations at sea. Ordinarily seldom found dead on beaches after winter and equinoctial gales (late June to October), but very commonly found dead and dying on beaches and inland (Midland, Morley, Perth) after gales in late July and early August 1984.

Pachyptila vittata (Forster)

Broad-billed Prion

No observations at sea and infrequently found dead or dying on beaches after winter storms (June-August).

Pachyptila salvini (Mathews)

Medium-billed Prion

No observations at sea, but moderately frequently found dead or dying on beaches and inland after winter storms (June-August).

Pachyptila desolata (Gmelin)

Antarctic Prion

No observations at sea, but very frequently found dead on beaches and occasionally inland (Wanneroo, Nedlands, Como, Wagerup, Harvey) after winter and equinoctial storms (mid-May to early October).

Pachyptila belcheri (Mathews)

Thin-billed Prion

No observations at sea, but frequently found dead or dying on beaches and occasionally inland (Capel) after winter storms (May to mid-September).

Pachyptila turtur (Kuhl)

Fairy Prion

No observations at sea and rarely found dead on beaches (north to lat. 32°S) after winter storms (late June to mid-September).

Procellaria aequinoctialis Linnaeus

White-chinned Petrel

No observations in continental seas. A dying bird found on beach at Scarborough in early May 1973 after a south-westerly gale, and one found dying at Rockingham in mid-November 1979.

Procellaria cinerea Gmelin

Grey Petrel

No observations in continental seas. One (WAM A18684) found at Busselton in early August 1941 after prolonged westerly gales (Whitlock and Whittell 1942,

Emu 42: 36), and one (WAM A19557) found dying on Cottesloe beach on 9 April 1985.

Puffinus carneipes Gould Fleshy-footed Shearwater

Passage migrant (late April to May and late August to October). Infrequently seen in continental seas or cast up on beaches after storms.

Puffinus pacificus (Gmelin) Wedge-tailed Shearwater

Common visitor (late August to early May), feeding mainly in seas well offshore and south at least to lat. 33°20'S. Breeding on Lancelin I. ('many thousands' of pairs), Edward I. (formerly 'several'), Rottnest I. (2600 at Cape Vlaming and Radar Head, 20 on Dyer I. and formerly a few on Parakeet and Green Is) and Carnac I. (nearly 200 on main island and a smaller number on Flat Rock): mid-November to early December; C/1 (invariably). Like other tropical seabirds, this species seems to be increasing in numbers and spreading southwards. Gilbert and other collectors for Gould evidently did not see it in the 1840s (it was first collected on Rottnest in 1889 and on Carnac in 1917). Whitlock (1905, *Emu* 4: 132) only saw 'a small series of burrows' at the west end of Rottnest in 1904; Storr (1964: 51) gave an estimate of nearly 600 burrows at the west end in 1956; Saunders and de Rebeira (1985: 14) counted 2570 burrows here in 1982.

Puffinus huttoni Mathews Hutton's Shearwater

Passage migrant (April to early June and mid-September to mid-December). Infrequently seen in continental seas or cast up after storms.

Puffinus assimilis assimilis Gould Little Shearwater

Uncommon visitor (February-January). Occasionally seen feeding in continental seas, usually in small parties (up to 6); fairly frequently found dead on beaches after winter storms. Formerly breeding on Parakeet I. off Rottnest I. (a few burrows before 1930), recently breeding on Penguin I. (a few burrows since 1980): July-August; C/1 (invariably).

Oceanitidae

Oceanites oceanicus (Kuhl) Wilson's Storm Petrel

Passage migrant. Commonly observed during northward passage (late February to mid-July, mostly April-June); in ones, twos or small parties (up to 8). Seldom found derelict on beaches.

Oceanites marinus dulciae (Mathews) White-faced Storm Petrel

Visitor (May-February), rarely seen at sea and infrequently found dead on beaches.

Breeding in large numbers on Lancelin I. (3-4000 pairs) and in very much smaller numbers on Shoalwater Bay islands (mainly Bird I., also Seal I. from 1959 to 1965).

Oceanodroma leucorhoa leucorhoa (Vieillot)

Leach's Storm Petrel

Accidental. One found dead at Pelican Point, Swan River estuary, on 15 April 1978, possibly victim of tropical cyclone 'Alby' (Broadhurst 1979, *West. Aust. Nat.* 14: 132).

Phaethontidae

Phaethon rubricauda Boddaert

Red-tailed Tropic-bird

Rare visitor (August-February). Accidental inland (Gingin Brook, Cockburn Cement Works). Breeding attempted on Rottnest I. (Storr 1964: 53) and at Busselton (Whittell and White 1940, *Emu* 40: 95): September-December; C/1(3).

Pelecanidae

Pelecanus conspicillatus Temminck

Australian Pelican

Common visitor, usually in ones, twos or small parties, sometimes large flocks when resting or breeding. Mainly estuaries and lakes (fresh or salt), occasionally freshwater sections of rivers, open waters of swamps, and sheltered seas (off east shore of Penguin I.). Breeding since 1962 on low islets in Peel Inlet (Creery I., Boodalan I., Nerimba Cay and Pelican I.): late August to February (also unsuccessful attempts from late June to early August): C/1(41), 2(196), 3(21).

Pelicans were observed on the Swan River estuary in pre-colonial times by Vlaming in January 1697, de Freycinet in June 1801 and Fraser in March 1827.

Sulidae

Sula (bassana) serrator (Gray)

Australian Gannet

Visitor (mid-March to early January, mostly June-October) to continental seas. Moderately common, though seldom recorded north of Rottnest I. and Cockburn Sound; usually single, occasionally in small parties (up to 5). Recoveries of banded birds include one from Lawrence Rocks, Vic., and one from New Zealand.

Phalacrocoracidae

Phalacrocorax sulcirostris (Brandt)

Little Black Cormorant

Range. Throughout the mainland. Casual on Rottnest, Carnac and Penguin Is.

Status etc. Common; in ones, twos or small flocks, occasionally large flocks (up

to 1000) or associated with *P. melanoleucos*. Estuaries, lakes, open swamps and the larger watercourses. Roosting in flocks and nesting colonially in wooded margins of swamps and lakes, sometimes in company of *P. melanoleucos*: May-December; C/3-6; largest colonies at Carraburmup Swamp (1000-1500 pairs) and Booragoon Lake (500 pairs).

Phalacrocorax carbo novaehollandiae Stephens Great Cormorant

Uncommon to moderately common; in ones, twos or small flocks (up to 10). Lakes, open swamps, larger watercourses, and estuaries. Breeding from April to July; C/2-5; largest colony at Booragoon Lake (200 pairs).

Phalacrocorax varius (Gmelin) Pied Cormorant

Common in vicinity of Lancelin and within 40 km of breeding islands, i.e. from Rottnest I. and the Swan River estuary south to Peel Inlet, moderately common on the Wonnerup Estuary and Broadwater (Busselton), scarce or uncommon elsewhere; usually single when feeding and in small parties or flocks (up to 50) when resting. Estuaries and sheltered seas; occasionally near-coastal lakes. Many hundreds breeding on Dyer I., Carnac I. and satellites, Bird I. and satellites, Shag Rocks and satellites, Tub Rocks and The Sisters, and formerly on Seal and Penguin Is: February-July; C/1-6 (mostly 2 or 3). For dispersal and mortality see Ford (1963, *West. Aust. Nat.* 8: 173-181).

Phalacrocorax melanoleucos (Vieillot) Little Pied Cormorant

Range. Throughout the mainland; also Lancelin, Rottnest, Garden, Bird, Seal, Shag and Penguin Is.

Status etc. Very common; usually in ones, twos or small parties, occasionally flocks (up to 80). Lakes, swamps, watercourses, ornamental pools, estuaries and sheltered seas. Roosting at Lake Claremont. Breeding at numerous wooded wetlands, occasionally among *P. sulcirostris* (e.g. up to 500 pairs at Carraburmup Swamp, near Peel Inlet), and since 1983 in small numbers on Duck Rock (Rottnest I.): July-December; C/3(3), 4(1).

Anhingidae

Anhinga melanogaster novaehollandiae (Gould) Darter

Range. Throughout the mainland. Casual on coast (Two Rocks, Woodman Point, Mangles Bay) and islands (Rottnest, Bird).

Status etc. Uncommon; usually single. Lakes, open swamps, larger watercourses, and estuaries. Breeding in wooded wetlands, in isolated pairs, colonially or among cormorants; late August to early October, also January (second clutch); C/3(3), 4(2). Has apparently increased since European settlement: T. Carter did

not record it anywhere in the South-West until 1919, and J. Gilbert evidently did not note it in 1839-43 (judging from Gould's failure to list it for Western Australia). However, Woodward (1902, *Western Australian Year-book for 1900-01*, 1: 258) was aware of its frequently nesting among colonies of cormorants.

Fregatidae

Fregata minor (Gmelin)

Greater Frigatebird

Accidental. One captured alive on the Perth foreshore, Swan River estuary, on 4 May 1917 after stormy weather (Alexander 1918, *Emu* 17: 238). Also an unconfirmed report of one at Fremantle on 5 May 1951 (Serventy and Whittell 1976).

Ardeidae

Ardea pacifica Latham

Pacific Heron

Visitor (mainly late winter to early summer). Moderately common to common in years of irruption (1923, 1926, 1941, 1952, 1957, 1975, 1978, 1981, 1985), but generally scarce or uncommon; usually single, occasionally in small parties, rarely large aggregations (up to 300). Shallow fresh waters, including flooded pastures, dams, and roadside ditches and puddles; rarely dry pastures. Breeding at Coolup in 1943 (Serventy 1948). For details of irruption in 1952 see Serventy (1953, *West. Aust. Nat.* 3: 185) and 1975, Dell (1985, *West. Aust. Nat.* 16: 28-30).

Ardea novaehollandiae Latham

White-faced Heron

Range. Throughout the mainland. Casual on Rottnest and Garden Is.

Status etc. Common to very common; when feeding usually single, but commonly in twos or small groups, also larger and looser aggregations (up to 425); flocks of up to 30 when resting or roosting. A great variety of habitats: shallow waters fresh, brackish or salt (occasionally including estuaries and sheltered seas) and low open grasslands (mainly pastures but also sports grounds). Breeding singly or in small groups: July-October; C/2(1), 3(1), 4(2).

Egretta alba alba (Linnaeus)

Great Egret

Formerly a rare and infrequent visitor; now an uncommon to moderately common resident, usually single, sometimes in small groups (up to 7), larger aggregations (up to 237) in summer and autumn, occasionally attending cattle. Shallow waters, mainly fresh but also brackish and salt. Breeding colonially (first reported in 1939) in a few wooded swamps from Lake Chandala south to McCarleys Swamp (Ludlow) and at South Perth Zoo: September-November; C/4(1); largest colony 40 pairs.

Egretta garzetta nigripes (Temminck)

Little Egret

Recently established on coastal plain between Perth and Bunbury: first recorded in 1965 (Ford 1966, *Emu* 15: 208). At present scarce; usually single, occasionally in small groups (up to 21) or accompanying White-faced Herons, Great Egrets or Straw-necked Ibises. Shallow waters fresh or salt. Up to three pairs breeding at Australind (first reported in 1981) and recently at Blythwood (S of Pinjarra): October-November; C/4(2).

Egretta sacra (Gmelin)

Eastern Reef Heron

Range. Islands (Rottnest, Carnac, Garden, Bird, Shag and Penguin) and rocky parts of mainland coast opposite them, viz. Two Rocks to Mullaloo, lower Swan River estuary (upstream to Mosman Park), and Cape Peron to Safety Bay. Casual at Lancelin, in broadwaters of Swan River estuary (Pelican Point, Alfred Cove), in Peel Inlet and in the Deadwater (Wonnerup Estuary).

Status etc. Scarce; usually single, rarely in twos. Mainly shallow seas over reefs. Almost all observations are of grey-phase birds.

Egretta ibis coromanda (Boddaert)

Cattle Egret

Infrequent visitor (since 1952) to farmlands and wetlands, usually in very small numbers and in company of cattle or horses; but from May 1959 to January 1960 widespread and plentiful, sometimes singly but usually in small groups (up to 8). Birds occasionally seen in breeding plumage. See Jenkins and Ford (1960, *Emu* 60: 245).

Nycticorax caledonicus hilli Mathews

Rufous Night Heron

Common. Mainly fresh waters. Roosting and nesting colonially in wooded wetlands; and nesting until 1914 on Bird I., Shoalwater Bay, and since 1915 at South Perth Zoo. Breeding in September and October; C/3(2), 4(1). Said to prey on nestling Great Egrets (Spence 1981, *West. Aust. Bd Notes* No. 19).

Ixobrychus minutus novaezelandiae (Potts)

Little Bittern

Range. Throughout the mainland. Accidental on Rottnest I.

Status etc. Moderately common visitor (late August to mid-March, occasionally to early April). Larger swamps and shallows of lakes, where beds of *Baumea articulata* and *Typha* spp. and thickets of *Melaleuca* provide daytime shelter and nest sites. Breeding in October and November; C/2(2), 3(3), 4(6). See Jaensch (1982, 1984, 1985, *West. Aust. Bd Notes* Nos 23, 29, 32).

Ixobrychus flavicollis (Latham)

Black Bittern

Formerly uncommon, now almost extinct on coastal plain: last recorded for the

Murray River in 1899, Herdsman Lake 1902, Mongers Lake 1917, Canning River 1920s, Preston and Capel Rivers early 1930s, and upper Swan River 1934. The only records since 1934 are recent reports of a single bird in the Goodale Sanctuary (15 km SW Pinjarra). Fresh waters (rivers, swamps and lakes) fringed with *Eucalyptus rudis* and *Melaleuca raphiophylla*. One breeding report (J. Gilbert): November; C/4.

Botaurus poiciloptilus (Wagler)

Brown Bittern

Formerly common, but declining throughout this century and now uncommon. Freshwater swamps and lake shallows with dense beds of *Baumea juncea*, *B. articulata* and *Typha*. Breeding c. November.

Threskiornithidae

Threskiornis aethiopicus moluccus (Cuvier)

Sacred Ibis

At present uncommon to moderately common; usually in small flocks, larger aggregations (up to 230) at roosting sites, occasionally accompanying other ibises and Yellow-billed Spoonbill. Mainly shallow fresh waters, including damp or inundated pastures; occasionally samphire flats and open estuarine waters. Breeding colonially (? since 1956) in five wooded wetlands, on their own or among Straw-necked Ibises, and at South Perth Zoo: late August to early October; largest colony 50 pairs. First recorded in 1952 (year of irruption of several northern and eastern species of waterfowl and raptors). For subsequent build-up see Bekle (1982, *West. Aust. Nat.* 15: 49-56). Occasionally hybridizing with Straw-necked Ibis (Bekle). The so-called hybrid between Sacred Ibis and Royal Spoonbill (*West. Aust. Bd Notes* No. 30: 4) was probably a juvenile spoonbill.

Threskiornis spinicollis (Jameson)

Straw-necked Ibis

At present common to very common; usually in flocks (sometimes of many hundreds). Mainly swamps and farmlands, occasionally sports grounds; attracted to swarming grasshopper nymphs and other insect larvae. Breeding in four wooded swamps and lakes (from Crackers Swamp south to McCarleys Swamp): August-October (? early November); C/2-3 (mostly), 4 (occasionally), 5 (rarely); largest colonies 2000 pairs.

Gilbert evidently saw no ibises or spoonbills in Western Australia in 1839-43. The present species was first reported during irruption of 1892, since when it has steadily increased its numbers. By 1921 Alexander rated it as moderately common, though he knew of no local breeding (first discovered in 1947, at swamp 20 km SW Coolup). From time to time local numbers have been augmented by irruptions from northern or eastern Australia, e.g. in 1907, 1931 and 1952. Birds banded locally as nestlings have been recovered in northern and

eastern Australia, and a nestling banded in New South Wales has been recovered here.

Plegadis falcinellus (Linnaeus)

Glossy Ibis

At present a scarce to uncommon resident; usually in small flocks (up to 24), sometimes accompanying other ibises. Shallows and adjacent flats of freshwater lakes and swamps: occasionally dry pastures. Two or more pairs breeding at Lake Chandala since 1983: November: C/3(2). First reported in April 1906 (one collected near Busselton). Before 1955 an infrequent and very rare visitor, invariably single.

Platalea regia Gould

Royal Spoonbill

At present rare; singly or in small parties (up to 8). Shallows of freshwater and brackish lakes and swamps. One breeding report (Barraghup Swamp near Mandurah, 1985): September-October. First recorded in 1924 (one collected at Herdsman Lake). Before 1954 an infrequent and very rare visitor.

Platalea flavipes Gould

Yellow-billed Spoonbill

At present a moderately common resident; in ones, twos or flocks (up to 120). Open shallows of lakes (fresh, brackish or salt) and swamps; also estuaries and inundated pastures. Breeding (? since 1979) in wooded wetlands at Crackers Swamp, West Gingin, Lake Chandala, Barraghup Swamp and McCarleys Swamp: September-October. First reported in 1954; from then until 1965 an infrequent and very rare visitor, invariably single.

Anatidae

Anseranas semipalmata (Latham)

Pied Goose

Infrequent and rare visitor. Three at Alfred Cove in 1953 (J.W. Baggs), two near Capel in September 1974 (Unkovich) and seven at Bushmead in July-August 1977 (R.D.M. Drew).

Dendrocygna arcuata (Horsfield)

Chestnut Whistling Duck

Infrequent and rare visitor. One at Wanneroo in December 1899 (W.A. Mus.), six at Jandakot in October-November 1978 (D. James, N. Kolichis) and one or two at Mongers Lake, Herdsman Lake, Perry Lakes and Bibra Lake from December 1983 to January 1987 (S. Keeling, O. Mueller and others).

Dendrocygna eytoni (Eyton)

Plumed Whistling Duck

Infrequent and very rare visitor. B. and A. Buchanan saw two at Mungala Lake in December 1984.

Cygnus atratus (Latham)

Black Swan

Range. Throughout the mainland. Casual on Rottnest I.

Status etc. Common; usually in pairs, family parties or small flocks, much larger aggregations (up to 5000) from November to April. Mainly open, extensive fresh waters, including (in winter) upper courses of rivers and inundated farmlands; also (in summer-autumn) brackish and saline lakes and estuaries; occasionally sheltered seas. Breeding mainly on fresh waters: June-October, mostly winter; C/3(1), 4(5), 5(2), 6(3), 7(2). For seasonal variation in numbers of swans and other anatids in the Bibra Lake area see Ford (1958, *Emu* 58: 31-41).

Cygnus olor (Gmelin)

Mute Swan

Vagrant, presumably from Northam. Reports from Lake Chandala (October 1979) and Perth (Hyde Park and Queens Gardens). Four birds transferred from Northam to North Lake in the early 1950s, disappeared soon after an unsuccessful attempt to nest (J.R. Ford). A rogue bird removed from Northam to Kings Park in 1968 was later seen at Jackadder Lake (December 1969) and Lake Monger.

Anser anser (Linnaeus)

Domestic Goose

Feral in small numbers on a few freshwater lakes around Perth, e.g. Lake Jandabup, Lake Monger and Bibra Lake. One breeding report (paperbark swamp near Southern River): c. September.

Stictonetta naevosa (Gould)

Freckled Duck

Rare, but possibly increasing in last few years; in ones, twos or small flocks (up to 83). Mainly wooded lakes and swamps, preferably fresh; rarely open saltlakes. Breeding reports from Crackers Swamp, two paperbark swamps in Banjup/Southern River area, and Benger Swamp: spring; C/7(2), 10(1).

Cereopsis novaehollandiae grisea (Vieillot)

Cape Barren Goose

Vagrant. One seen near Busselton in 1942 (Serventy and Whittell 1976).

Cairina moschata (Linnaeus)

Muscovy Duck

Feral in very small numbers on Lake Monger, Bibra Lake and possibly other lakes around Perth.

Tadorna tadornoides (Jardine and Selby)

Mountain Duck

At present moderately common to very common (most numerous in summer-autumn); usually in pairs, family parties or small flocks, with much larger aggregations of moulting birds from late October to January, e.g. thousands on Lakes Guraga, Clifton and Preston, Peel and Leschenault Inlets and the Serpen-

tine, Harvey, Wonnerup and Vasse estuaries. Mainly salt or brackish lakes and estuaries, also fresh waters (especially for breeding) and occasionally sheltered seas. Breeding in moderate numbers on Rottnest I., in small numbers on mainland and one pair on Penguin I. (1982): mid-May to mid-October; C/6-15. Most birds are evidently non-breeding visitors from the wheat belt, where they have increased greatly this century. Birds banded on Rottnest I. have been recovered as far north as Snag I. and as far east as Kalgoorlie and Esperance. For the biology of the Rottnest population see Riggert (1977, *Wildl. Monographs* No. 52).

Anas platyrhynchos Linnaeus

Mallard

Mallards or their domestic derivatives are feral in small numbers on several lakes around Perth.

Anas superciliosa Gmelin

Black Duck

Range. Throughout the mainland. Casual on Rottnest I.; vagrant on Garden I.

Status etc. Common to very common (most numerous in summer-autumn); in ones, twos, family parties or small flocks, also from late October to April large flocks (up to 3500). Mainly fresh and brackish waters in breeding season; also salt waters in summer-autumn. Breeding from July to November; C/5(1), 7(4), 8(8), 9(5), 10(1), 11(1), 12(1), 13(1).

Anas querquedula Linnaeus

Garganey

Vagrant from northern Eurasia. Two observed by Congreve (1971, *West. Aust. Nat.* 12: 48) at Loch McNess in March 1971.

Anas castanea (Eyton)

Chestnut Teal

Rare non-breeding visitor (mainly May-September); usually single, occasionally in twos or small flocks (up to 12).

Anas (gibberifrons) gracilis Buller

Grey Teal

Range. Throughout the mainland; also Rottnest I.

Status etc. Mainly a non-breeding visitor. Moderately common to very common (most numerous from late spring to autumn); in ones, twos or small flocks, also much larger aggregations (up to 12 000) from late September to May. Salt, brackish and fresh waters, including estuaries. Breeding in moderate numbers on fresh waters: July-October, also April (following tropical cyclone of February 1955); C/6(1), 7(2), 8(1), 10(2), 11(1).

Anas acuta Linnaeus

Pintail

Vagrant from northern Eurasia. One observed at Lake Chandala in July 1986 (*West. Aust. Bd Notes* No. 39: 1, 1986).

[*Anas clypeata* Linnaeus

Northern Shoveler

Possibly a vagrant. An unconfirmed report of a male in breeding plumage near Lake Namming on 23 July 1982 (*West. Aust. Bd Notes* No. 23: 8, 1982).]

Anas rhynchotis rhynchotis Latham

Blue-winged Shoveler

Scarce to moderately common (most numerous in summer-autumn); usually in ones, twos or small flocks, occasionally much larger aggregations (up to 2000) from January to July. Preferring the larger and deeper bodies of water, especially wooded freshwater lakes. Breeding from late July to October; C/9(1), 10(1).

Malacorhynchus membranaceus (Latham)

Pink-eared Duck

At present uncommon to moderately common (most numerous in summer-autumn); usually in pairs or small flocks, occasionally much larger aggregations (up to 5000) from January to June. Larger bodies of water fresh or salt. Breeding in small numbers on many freshwater lakes and swamps: August-September and December-February; B/4(2), 5(1), 6(1). Before 1952 a very rare and infrequent visitor, in ones or twos. In next few years it quickly became a frequent autumn-summer visitor, in flocks of up to 150 (Ford 1962, *West. Aust. Nat.* 8: 103). It has continued to increase and has begun to remain in moderate numbers throughout winter and spring. First breeding recorded in 1963.

Aythya australis (Eyton)

Hardhead

Range. Throughout the mainland. Casual on Rottne I.

Status etc. At present uncommon (evidently more numerous in past); in ones, twos or small flocks, occasionally larger aggregations (up to 1000). Mainly fresh and brackish waters, rarely salt. Breeding from late July to November; C/6(1), 7(1), 9(3), 10(4), 11(2), 15(1), 16(1), 20(1).

Chenonetta jubata (Latham)

Wood Duck

At present locally uncommon to moderately common in eastern zone but generally scarce (before 1955 a rare visitor, mainly in summer-autumn); usually in pairs, family parties or small flocks (up to 270). Pastures and marshy grasslands in vicinity of fresh water, especially farm dams. Breeding from June to October; C/14(1).

Nettapus pulchellus Gould

Green Pygmy-goose

Vagrant. Two observed by Bond (1967, *West. Aust. Nat.* 10: 138) at Lake Jandabup on 4 March 1967.

Oxyura australis Gould

Blue-billed Duck

Moderately common; in ones, twos or small flocks, with aggregations of hundreds in autumn and winter. Deeper fresh and brackish waters, rarely salt waters. Breeding from August to March (mostly October-January); C/6(2), 7(1), 9(2), 10(3).

Biziura lobata (Shaw)

Musk Duck

Uncommon to moderately common; usually in ones, twos or family parties, also large aggregations (up to 2000 on Lake Clifton) in summer-autumn. Deeper and more extensive, fresh, brackish and salt waters (including estuaries, but not the broad waters of the Swan River in last 80 years). Breeding in rushy freshwater swamps and lakes: late July to early February; C/2(12), 3(5).

Accipitridae

Elanus caeruleus notatus Gould

Black-shouldered Kite

Range. Throughout the mainland. Casual on Garden I.

Status etc. Mainly a visitor (mostly autumn-winter). Moderately common in certain periods (1942-43, 1951-54, 1985-86), but generally scarce or uncommon and rarely reported before 1942; usually single, occasionally in small groups (up to 4). Open or lightly wooded country: mainly farmlands of eastern zone, also vicinity of wetlands and over rail tracks and coastal dunes. Occasionally breeding (June-November); C/3(1).

Lophoictinia isura (Gould)

Square-tailed Kite

Visitor (late July to mid-April); usually single. Uncommon near foot of Darling Range, where it possibly breeds; scarce further west where observed mainly in summer. Well-wooded country, including a leafy south-eastern suburb of Perth (Kelmscott).

Haliastur sphenurus (Vieillot)

Whistling Kite

Resident and summer-autumn visitor. Formerly common, now uncommon to moderately common; usually single, occasionally in twos, rarely small flocks (up to 6). Mainly wetlands and farmlands; attracted to Straw-necked Ibis rookeries (where it feeds on eggs and dead young) and to other nesting water-

fowl, poultry farms, flying ants (*Camponotus*) and dead seabirds and other animals cast up on beaches. Breeding in October and November; C/2(3).

Milvus migrans affinis Gould

Black Kite

Common on coastal plain during irruption of April-May 1952, singly or in flocks of up to 30 (Serventy 1953, *West Aust. Nat.* 3: 195). Otherwise a very rare and infrequent visitor.

Accipiter fasciatus fasciatus (Vigors and Horsfield)

Brown Goshawk

Range. Throughout the mainland; also Rottneest and Garden Is during northward passage.

Status etc. Scarce resident, uncommon winter visitor and moderately common passage migrant (mostly January-March and September-October); usually single. Well-wooded country; attracted to poultry farms and aviaries (especially at South Perth Zoo). One breeding record (Swan River, 1897): C/4.

Accipiter cirrocephalus cirrocephalus (Vieillot)

Collared Sparrowhawk

Scarce resident and post-breeding nomad and uncommon winter visitor (May-September); usually single. Well-wooded country, especially near water; attracted to aviaries. Breeding in October and November; C/3(2).

Aquila morphnoides morphnoides Gould

Little Eagle

Scarce resident and winter visitor (April-August); usually single. Farmlands in eastern zone, vicinity of rivers and lakes, and tuart woodlands of western zone. Casual on Penguin I. Breeding in September and October. First recorded in 1929, i.e. about time of arrival of the rabbit, its principal prey.

Aquila audax (Latham)

Wedge-tailed Eagle

At present scarce to uncommon (more numerous in past; now most plentiful in northern quarter and in autumn and early winter); in ones or twos. Lightly wooded country and farmlands (especially lambing paddocks). One dated breeding record (Byford): c. August.

Haliaeetus leucogaster (Gmelin)

White-breasted Sea Eagle

Rare visitor to mainland coasts, estuaries (on the Swan upstream to Rivervale), lakes (Guraga, Bambun, Thomsons) and Rottneest I.; single. One breeding report: bird on nest in tuart near Peel Inlet on 27 October 1984 (Anon. 1984, *West. Aust. Bd Notes* No. 32: 8).

Circus assimilis Jardine and Selby Spotted Harrier

Range. Throughout the mainland; also Rottnest I.

Status etc. Rare visitor (mainly January-June); single. Lightly wooded country, especially heathlands and farmlands.

Circus (aeruginosus) approximans Peale Marsh Harrier

Range. Throughout the mainland. Casual on Rottnest, Garden and Penguin Is.

Status etc. Formerly common, now uncommon to moderately common; in ones or twos. Mainly rushy swamps and lakes, especially about breeding waterfowl; also farmlands and other open country. Breeding from September to November (exceptionally January); C/2(2), 3(1).

Pandion haliaetus cristatus (Vieillot) Osprey

Uncommon; usually single. Mainly about offshore islands, occasionally visiting mainland coasts and (especially in summer-autumn) estuaries, viz. Moore River, Swan River upstream to Guildford, Lake Goegrup, Peel Inlet and Wonerup. Breeding on islands: formerly Lancelin (one pair), Edward (1), Rottnest (2-4), Garden (1) and formerly Penguin (1): mid-August to September; C/2(3), 3(8). Also unsuccessful attempt to breed on mainland (Yunderup, 1986).

Falconidae

Falco subniger Gray Black Falcon

Very rare visitor. One seen at Wembley in January 1967 (Storr 1967, *West. Aust. Nat.* 10: 138) and one (WAM A12892) taken at Mundijong in August 1973.

Falco peregrinus macropus Swainson Peregrine

Uncommon visitor (January-July, mostly February-April; also September to November); usually single. Lightly wooded country, especially wetlands; attracted to feral pigeons, e.g. in Perth City and at Leighton railway yards.

Falco longipennis longipennis Swainson Australian Hobby

Range. Throughout the mainland. Casual on Lancelin and Rottnest Is.

Status etc. Uncommon to moderately common visitor (mostly February-July, peaking in May); usually single, occasionally in twos. Lightly wooded country, especially wetlands.

Falco berigora berigora Vigors and Horsfield Brown Falcon

Range. Throughout the mainland. Casual on Rottnest I.

Status etc. Formerly very common, now uncommon to moderately common (slightly more numerous in autumn than other seasons); usually single. Lightly wooded country; attracted to bushfires. Breeding from late August to early October; C/2(1), 3(3).

Falco cenchroides cenchroides Vigors and Horsfield Australian Kestrel

Range. Throughout the mainland; also Lancelin, Rottnest, Seal and Penguin Is.

Status etc. Common to very common resident and visitor (most numerous in autumn-winter); usually in ones or twos, occasionally small aggregations (up to 8) at grassfires and swarming grasshoppers. Open or sparsely wooded country, especially coastal dunes, near-coastal heathlands, and farmlands. Breeding from late August to early October; C/3(2), 4(1), 5(1); mainly nesting in limestone cliffs on coasts and islands and in tree hollows inland.

Megapodiidae

Leipoa ocellata Gould Mallee Fowl

Formerly occurring in far north and extreme south-west. They persisted in the Beermullah area until about the second decade of this century (R. Roe, pers. comm.) and in 'mixed scrub' and/or 'stinkwood scrub' around Geographe Bay until at least 1889 (Campbell 1900, *Nests and Eggs* . . . , p. 706) [and until at least 1932 at nearby Cape Naturaliste just outside of the region (Whittell, *Emu* 32: 315)]. Breeding in October and November.

Phasianidae*

Coturnix novaezelandiae pectoralis Gould Stubble Quail

Moderately common visitor (mostly November-April); usually in small flocks. Mainly farmlands, also swamp margins and sparsely wooded coastal dunes. Breeding in spring; C/6(2), 8(1).

Phasianus colchicus Linnaeus Common Pheasant

Feral on Rottnest I. (liberated by South Perth Zoo in 1928). Common; usually single, occasionally in small groups (up to 15). Most habitats, but favouring well-wooded country in vicinity of fresh water. Breeding in October and November; C/8(1), 14(1).

Pavo cristatus Linnaeus Common Peafowl

Feral on Rottnest I. (liberated by South Perth Zoo in first or second decade of this century). Moderately common; usually single or in family parties. Well-

wooded country in eastern half of island. Breeding in October and November; C/5(1), B/2(1), B/3(1), B/7(1).

Colonies established on the mainland by the South Perth Zoo early this century no longer exist. Several pairs released at a farmhouse near Gingin flourished for more than 20 years in thick bush about the headwaters of Gingin Brook but did not long survive the coming of the fox in the early 1930s (I. Edgar, pers. comm.). The colony near Pinjarra was in decline by 1950s (Jenkins 1959, *Emu* 59: 206).

Meleagris gallopavo Linnaeus

Common Turkey

Feral for a short period on Garden I. Escapees from a turkey farm set up in 1946 became established on north end of island but were exterminated by shooters soon after 1958. A hen was seen with young in November 1957.

* Records of Brown Quail (*Coturnix ypsilophora*) and King Quail (*C. chinensis*) are probably based on aviary escapees or their descendents.

Turnicidae

Turnix varia varia (Latham)

Painted Button-quail

Formerly uncommon to moderately common, now scarce; in pairs or family parties. Well-wooded country, especially jarrah-marri forest on heavier soils of eastern zone; also tuart forest in western zone. Breeding from late August to December; C/4(3).

[*Turnix velox* (Gould)

Little Button-quail

Said by Alexander (1921: 155) to be an irregular non-breeding visitor to the Swan River district, and by Serventy and Whittell (1976: 184) to be an irregular visitor to Perth area.]

Rallidae

Gallirallus philippensis melli (Mathews)

Banded Land-rail

Mainly a breeding visitor and passage migrant, mostly recorded from September to March, a few reports in other months. Moderately common. Grassy flats beside rushy swamps, lakes and river banks; also irrigated fodder crops and dense shrubland on islands (breeding on Lancelin and transient on Penguin and ? Rottnest). Breeding from late August to December; C/5(1), 8(1).

Porzana pusilla palustris Gould

Baillon's Crake

Moderately common visitor (September-February). *Typha*, *Baumea* and flooded grass in swamps and around freshwater lakes. Breeding from September to November; C/3(1), 6(1).

Porzana fluminea Gould

Spotted Crake

Uncommon to moderately common. *Typha*, *Baumea*, sedges and samphires in swamps and around lakes and estuaries. One breeding report (Herdsman Lake): c. November.

Porzana tabuensis (Gmelin)

Spotless Crake

Common; usually in ones or twos, occasionally small aggregations (up to 20). *Juncus*, *Typha*, *Baumea* and paperbarks in swamps, around lakes and along river banks; also fodder crops and (on Lancelin I.) dry shrubland. Breeding from September to December; C/4(1), 6(1).

Porphyrio porphyrio bellus Gould

Swamphen

Common to very common; in ones, twos, small parties (up to 10) or larger but looser aggregations (up to 30). Shallows and grassy flats (including lawns, sport grounds and pastures) near *Typha*, *Baumea*, *Juncus* and other shelter in swamps, around lakes and along rivers. Breeding from mid-July to November; C/2(1), 3(6), 4(14), 7(1).

Gallinula ventralis Gould

Black-tailed Native Hen

Irregular visitor (mostly April-May and August-September), appearing in most years, occasionally in large numbers (1833, 1835, 1886, 1919, 1975) but generally in small to moderate numbers; usually feeding in ones, twos or small parties. Shallow fresh waters and nearby grassy flats, including pastures, crops, golf links and racecourses. Occasionally breeding: spring.

Gallinula tenebrosa tenebrosa Gould

Dusky Moorhen

Range. Greater part of region, north to the lower Moore River and Gingin Brook. Status etc. Moderately common to common; usually in ones, twos or family parties. Swamps, lakes, rivers and drains in vicinity of *Typha* and other rushes, and occasionally nearby grassy flats, including lawns. Breeding from August to November; C/4(3), 5(4), 6(4), 7(2), 8(2), 9(1), 11(1).

Fulica atra australis Gould

Coot

Very common; usually in pairs, family parties or small flocks, commonly large

flocks (up to 500), also very large aggregations (up to 700) on larger wetlands, e.g. Lake Guruga, Lake Joondalup, Thomsons Lake, Forrestdale Lake and Lake Clifton, mostly in autumn. Mainly fresh and brackish waters and adjacent grassy flats, including lawns; also saltlakes and estuaries in summer-autumn. Breeding from July to December (exceptionally to February); C/4(3), 5(6), 6(5), 7(6), 8(4), 9(3).

Otididae

Otis australis Gray

Australian Bustard

At present a scarce visitor (mainly January-June); usually single, occasionally in small parties (up to 4). Mainly near-coastal heathlands between Lancelin and Mullaloo; formerly similar country between Rockingham and Lake Preston, but only one recent report (one at Singleton Beach, May 1986). Also farmlands around Beermullah and formerly in the Pinjarra district (no reports since 1952).

Rostratulidae

Rostratula benghalensis australis (Gould)

Painted Snipe

Formerly common, now a very rare visitor. A pair collected, presumably near Perth in 1841 (Serventy and Whittell 1976); a pair (WAM A14716-7) collected at Herdsman Lake in 1897; a female (WAM A7335) collected at Pinjarra in May 1905; a female captured and released by J.D. Clarke (*in litt.*) in a dry swamp near the Vasse River in January 1986; three seen at Lake Bambun by A. and B. Buchanan in November 1986 (*West. Aust. Bd Notes* No. 41: 2, 1987).

Haematopodidae

Haematopus (ostralegus) longirostris Vieillot

Pied Oystercatcher

Formerly uncommon, now moderately common (at least on Rottnest I.); in ones, twos or family parties in breeding season, also small parties (up to 13) in off-season. Seaweedy beaches, reef flats, edge of saltlakes (Rottnest I.), and recently estuaries and near-coastal short grass, e.g. golf links on Rottnest I. and road verge at Rockingham. Breeding on islands (Lancelin, Rottnest, Carnac, Penguin): July-October; C/2(3). Visiting mainland coasts opposite islands in off-season (late December to early July); casual inland (Loch McNess, Swan River estuary at Dalkeith and Pelican Point, Lake Richmond). For change in abundance on Rottnest I. see Saunders and de Rebeira (1986: 239).

Haematopus fuliginosus fuliginosus Gould

Sooty Oystercatcher

Rare visitor (mostly May-September, also October, November and January),

presumably from south coast, to Rottnest, Carnac, Seal and Penguin Is and mainland coast north to Burns Beach; usually single, occasionally in twos or small parties (up to 4).

Charadriidae

Vanellus miles miles (Boddaert)

Masked Plover

Vagrant. A specimen (WAM A8355) was collected by G.F. Mees and J.R. Ford at Jackadder Lake on 14 March 1959; it was seen a week earlier at Perry Lakes. Two were observed by White (1983 *West. Aust. Nat.* 15: 168) near North Lake on 20 and 22 April 1983.

Vanellus miles novaehollandiae Stephens

Rare visitor from south-eastern Australia. On 7 and 14 March 1959 J.R. Ford saw one with the above *V. m. miles* at Perry Lakes and Jackadder Lake. T.G. Dixon saw one near Leschenault Inlet (Ford 1960, *Emu* 60: 58). On 5 November 1966 C.D. Fisher collected one at 20 km N Mandurah. On 28 February 1981 G.J. Roberts saw three at Bibra Lake. On 31 October 1986 T.J. Delaney saw one at Heirisson I.

Vanellus tricolor (Vieillot)

Banded Plover

Range. Throughout the mainland; also Rottnest I. Casual on Garden I.

Status etc. At present moderately common; usually in pairs or family parties, also flocks (up to 50, mostly in autumn). Short-grass flats (including farmlands, airports, golf links and sports grounds), especially in vicinity of wetlands; attracted to ploughing. Breeding from June to November (mainly in winter); C/3(2), 4(12).

Previously unknown in region, it colonised the Gingin, Pinjarra and Busselton districts in the second decade of this century. In the 1920s it became established around Cannington, Maddington and Mundijong. In the 1930s it colonised Rottnest I. and the Wellard-Rockingham district.

Pluvialis squatarola (Linnaeus)

Grey Plover

Uncommon to moderately common visitor (all months, mostly September-April) to mainland and Rottnest, Carnac, Garden and Penguin Is; in ones, twos or small flocks (up to 100). Mainly ocean beaches and reef flats, commonly shores of estuaries and saltlakes, occasionally drying freshwater lakes (Karakin, Forrestdale). For increase on Rottnest I. lakes see Saunders and de Rebeira (1986: 239).

Pluvialis fulva (Gmelin)

Eastern Golden Plover

Visitor (September-April) to mainland and Rottneest I. Scarce to moderately common (most plentiful in former Causeway marshes of Swan River, least on Rottneest I.); usually single or in small parties (up to 4), occasionally flocks (up to 74). Mainly mudflats and inundated or damp samphire flats around estuaries (and occasionally saltlakes), and shallows of freshwater and brackish swamps and lakes. For regional decline see Saunders and de Rebeira (1986: 241).

Charadrius cucullatus Vieillot

Hooded Plover

Scarce visitor (October-May), presumably from dried-out saltlakes in southern interior of Western Australia; in ones, twos or small flocks (up to 17). Sandy beaches and shores of estuaries and lakes (including those on Rottneest I.).

Charadrius dubius curonicus Gmelin

Little Ringed Plover

Very rare visitor. Reports of single birds on freshwater mudflats at Forrestdale Lake in February and March 1981, December 1982, January-May 1984 and April 1987. See Curry *et al.* (1983, *Stilt* No. 4: 9-10).

Charadrius (alexandrinus) ruficapillus Temminck

Red-capped Plover

Range. Mainland and Rottneest, Carnac, Garden, Seal and Penguin Is.

Status etc. Moderately common to very common; in ones, twos or small parties, occasionally flocks (up to 150), also large aggregations (up to 3000) at drying lakes in late summer and autumn.

Mainly shores of saltlakes; also ocean beaches and sparsely vegetated dunes, shores of estuaries, and drying freshwater lakes and swamps. Tending to vacate wetlands and estuaries after onset of winter rains. Breeding from August (? late June) to February; C/1(3), 2(14).

Charadrius bicinctus bicinctus Jardine and Selby

Double-banded Plover

Very rare visitor (March-August) from New Zealand; in ones or twos. Coastal and estuarine beaches; also a saltlake (Guraga).

Charadrius mongolus mongolus Pallas

Mongolian Sand Plover

Very rare visitor (December-February); single. Ocean beaches and shores of larger lakes.

Charadrius leschenaultii Lesson

Large Sand Plover

Rare to scarce visitor (September-April); in ones, twos or small parties (up to 8).

Ocean and estuarine beaches and shores of saltlakes, including those of islands. For recent decline see Saunders and de Rebeira (1986: 241).

Charadrius melanops Vieillot

Black-fronted Plover

Range. Throughout the mainland. Casual on Rottnest I.

Status etc. Uncommon to moderately common (most numerous in autumn); in ones, twos or family parties, occasionally small flocks (up to 15), also aggregations (up to 75) in autumn. Bare margins of lakes, swamps and watercourses; also edge of farm dams and occasionally marshy paddocks and market gardens. Tending to vacate swamps and lakes as they fill with winter rains and to return as water recedes in late spring or summer. Breeding from mid-August to early February; C/2(4), 3(4).

Charadrius veredus Gould

Oriental Plover

Vagrant. One collected (WAM A2770) by D.L. Serventy at Forrestdale Lake on 14 February 1926.

Charadrius cinctus (Gould)

Red-kneed Plover

Scarce to moderately common visitor (September-June, mostly November-March); in ones, twos or small parties (up to 6), also larger aggregations (up to 90) in summer. Mainly muddy edges and shallows of fresh or brackish swamps and lakes; also samphire flats and drying ponds. Occasionally breeding (reports from Herdsman Lake and Maylands): November-January; C/4(1).

Peltohyas australis (Gould)

Australian Dotterel

Vagrant. Observed by Curry (1981, *Stilt* No. 1: 5) on dry bed of Forrestdale Lake in summer 1980-81, and one observed by P. Griffin at Alfred Cove in March 1982.

Scolopacidae

Numenius minutus Gould

Little Whimbrel

Very rare visitor (November-April); in ones or twos. Mainly short grass, e.g. pastures and young millet; also estuaries.

Numenius phaeopus variegatus (Scopoli)

Whimbrel

Visitor (all months, mostly October-February). Uncommon on west end of Rottnest I. (where it overwinters in some years), but generally scarce; usually single, occasionally in twos or small flocks (up to 15). Mainly exposed reef flats; also shores of estuaries and (rarely) near-coastal saltlakes.

[*Numenius arquata* (Linnaeus)]

Western Curlew

An unconfirmed report of two at Cape Peron in November 1969 (Hutchison 1971, *West. Aust. Nat.* 12: 22).]

Numenius madagascariensis (Linnaeus)

Eastern Curlew

Visitor (August-June, mostly September-March). Uncommon in northern Peel Inlet and southern Leschenault Inlet, rare to scarce elsewhere; usually in ones or twos, occasionally small flocks (up to 14). Mainly mud flats and samphire flats in estuaries; also ocean beaches and reef flats and near-coastal lakes; rarely short-grass flats (where attracted to grasshoppers) and inland lakes (Bambun).

Limosa limosa melanuroides Gould

Black-tailed Godwit

Scarce or uncommon visitor (late October to July, mostly January-April); in ones, twos or small flocks (up to 25). Shallows of freshwater lakes and swamps, but mainly shores of estuaries during northward passage in summer and autumn.

Limosa lapponica baueri Naumann

Bar-tailed Godwit

Visitor (all months, mostly October-April). At present moderately common; in ones, twos or small flocks (up to 80), rarely large aggregations (537). Shores of estuaries and ocean beaches and reef flats, including those of Rottnest, Carnac, Garden and Penguin Is; occasionally near-coastal saltlakes (Rottnest I.). Not recorded before 1931 and still scarce by 1948.

Tringa totanus (Linnaeus)

Redshank

Very rare visitor. One observed by Jaensch and Blyth (1988, *West. Aust. Nat.* 17) near Creery I., Peel Inlet, on 12 July 1985.

Tringa stagnatilis (Bechstein)

Marsh Sandpiper

Scarce to uncommon visitor (September-May); usually single, occasionally in twos or small flocks (up to 50). Freshwater swamps and lakes; occasionally estuaries, rarely coasts.

Tringa nebularia (Gunnerus)

Greenshank

Visitor (late September to July, mostly November-May). Uncommon to moderately common (more plentiful south of Swan River than further north); in ones, twos or small flocks (up to 100). Shallows of freshwater lakes and swamps; also shallows and samphire flats around saltlakes (but rarely those on Rottnest I.) and estuaries.

Tringa glareola Linnaeus

Wood Sandpiper

Scarce to uncommon visitor (August-May, mostly December-March); in ones, twos or small flocks (up to 64). Mainly drying freshwater swamps and lakes; rarely estuaries.

Tringa terek (Latham)

Terek Sandpiper

Rare visitor (mid-September to early April); usually single, occasionally small parties (up to 7). Mainly lower parts of estuaries (Moore, Swan and Harvey Rivers and Peel and Leschenault Inlets); rarely sheltered coasts (Woodman Point).

Tringa hypoleucos Linnaeus

Common Sandpiper

Uncommon visitor (August-May, mostly October-March); usually in ones or twos. Sheltered rocky coasts (including Lancelin, Rottnest, Carnac, Garden, Bird and Penguin Is) and estuaries, rivers, lakes and swamps.

Tringa brevipes (Vieillot)

Grey-tailed Tattler

Uncommon visitor (September-June, mostly November-March); usually single, occasionally in small parties (up to 5). Reef flats and mud flats on sheltered coasts (including Rottnest, Carnac and Garden Is); occasionally near-coastal lakes (Government House, Coogee, Richmond) and Peel Inlet.

Arenaria interpres interpres (Linnaeus)

Ruddy Turnstone

Visitor (all months, mostly October-April). Common on Rottnest I., moderately common on other islands (Lancelin, Edward, Carnac, Garden, Bird, Seal, Penguin), uncommon on rocky mainland coasts (Two Rocks, Yanchep Beach, Mullaloo, Woodman Point, Cape Peron, Point John, Safety Bay, Mandurah) and lower parts of estuaries (Alfred Cove), scarce elsewhere (Pelican Point, Lake Richmond, Alcoa Pits); in ones, twos or small flocks, occasionally large flocks (up to 100) on Rottnest I. Mainly the pebble-strewn shores of Rottnest I. salt-lakes; also stony and sandy coasts.

Gallinago stenura (Bonaparte)

Pin-tailed Snipe

Very rare visitor. One of two birds was mist-netted on 'a north metropolitan swamp' [at Osborne Park] in March 1984 (Shannon *et al.* 1984, *West. Aust. Bd Notes* No. 30: 13). Single snipes have been observed at Bibra Lake, Lake McLarty, the Vasse estuary and Dunsborough in recent summers; R.P. Jaensch (pers. comm.) believes that the Dunsborough birds were *G. hardwickii* and the rest *G. stenura*.

Calidris canutus canutus (Linnaeus)

Red Knot

Visitor (September-July). Locally common (Broun Bay on Garden I.), but generally scarce; in ones, twos or small flocks (up to 50), occasionally larger aggregations (up to 542). Shallows of estuaries, sheltered coasts (including Rottnest and Garden Is) and near-coastal lakes (Cooloongup). Probably many knots of both species are misidentified in winter plumage, which vitiates the generalisations made herein.

Calidris tenuirostris (Horsfield)

Great Knot

Visitor (September-July, mostly October-February). Scarce to uncommon; in ones, twos or small flocks (up to 50), occasionally larger aggregations (up to 771). Shallows of estuaries and coasts (including Rottnest and Garden Is).

Calidris alba (Pallas)

Sanderling

Uncommon to moderately common visitor (late July to May); in ones, twos or small flocks, rarely large flocks, e.g. 484 on Garden I. on 9 November 1982. Mainly steeply shelving, sandy beaches exposed to ocean swell, i.e. mainland coast from Lancelin south to Mullaloo and south coasts of Rottnest and Garden Is; also Rottnest I. saltlakes, sheltered coasts (City Beach, Woodman Point, Mandurah) and lower part of Swan River estuary.

Calidris ruficollis (Pallas)

Red-necked Stint

Very common visitor (all months, mostly October-April); usually in flocks (up to 1000 or more), occasionally huge aggregations (up to 10 000). Mainly shores of estuaries, sheltered seas (including Lancelin, Rottnest, Carnac, Garden, Seal and Penguin Is), saltlakes (especially on Rottnest I.) and (mostly in summer-autumn) drying freshwater lakes and swamps.

Calidris minuta (Leisler)

Little Stint

Very rare visitor. Two observed at Forrestdale Lake in April 1982 (Curry *et al.* 1983, *Stilt* No. 4: 6) and one in summer 1984-85.

Calidris subminuta (Middendorff)

Long-toed Stint

Visitor (October-June, mostly December-March). Locally and seasonally moderately common, e.g. at Forrestdale Lake and Lake McLarty in mid-summer, but generally scarce to uncommon; in ones, twos or small flocks (up to 9), occasionally larger flocks (up to 60). Freshwater lakes and swamps (especially when drying and where herbage short); occasionally samphire flats around estuaries and saltlakes.

Calidris fuscicollis (Vieillot) White-rumped Sandpiper

Vagrant. One observed at Forrestdale Lake on 8 February 1981 (Curry *et al.* 1983, *Stilt* No. 4: 8-9).

Calidris melanotos (Vieillot) Pectoral Sandpiper

Scarce visitor (late August to early April, mostly November-February): in ones, twos or small flocks (up to 12). Mainly freshwater lakes and swamps; occasionally samphire flats around estuaries and saltlakes.

Calidris acuminata (Horsfield) Sharp-tailed Sandpiper

Moderately common visitor (late August to early July, mostly September-March); in ones, twos or small flocks (up to 40), occasionally many hundreds. Wet samphire flats around estuaries and saltlakes (but rarely those on Rottnest I.) and drying freshwater lakes and swamps; casual on coasts (mainland opposite Edward and Garden Is).

Calidris ferruginea (Pontoppidan) Curlew Sandpiper

Common visitor (all months, mostly October-March); in ones, twos or flocks (up to 300). Shallows of estuaries, saltlakes (especially on Rottnest I.) and freshwater lakes and swamps; casual on coasts (Rottnest I., Cape Peron).

Limicola falcinellus sibiricus Dresser Broad-billed Sandpiper

Rare visitor; in ones, twos or small parties (up to 5). Observed on the Swan River estuary in the Alfred Cove/Point Waylen area in October and November, at Forrestdale Lake in December and January after water had receded from vegetated margins, on Creery I. mudflats in March, and at mouth of Preston River in December.

Philomachus pugnax (Linnaeus) Ruff

Rare visitor (reported from late October to February and in June); usually single, occasionally in small parties (up to 5). Mainly freshwater lakes; also estuaries.

Recurvirostridae

Himantopus himantopus leucocephalus Gould Black-winged Stilt

Common visitor (all months, least in July and August); in ones, twos or small flocks; occasionally large, loose aggregations (up to 3000) in summer. Shallow open waters, fresh or subsaline, and recently inundated short grass; casual on supersaline Rottnest I. saltlakes. Occasionally breeding (August-November); C/4(14).

Cladorhynchus leucocephalus (Vieillot)

Banded Stilt

Irregular visitor (mid-August to June, exceptionally to July; mostly December-March), its numbers and occurrence depending on onset of autumn and winter rains locally and in interior. Uncommon to very common (most numerous on Rottnest I., Peel Inlet and the Harvey Estuary); usually in flocks (up to 2000). Mainly saltlakes and estuaries, also fresh and brackish lakes and swamps; casual on sheltered coasts (Rottnest I., Carnac I.).

Recurvirostra novaehollandiae Vieillot

Red-necked Avocet

Uncommon to common visitor (most numerous in January-April, least in July-November); in ones, twos or small flocks, occasionally large flocks (up to 2000). Shallows of estuaries and of open lakes and swamps. Recently breeding in small numbers on Rottnest I. (Saunders and de Rebeira 1986: 242): November-January; C/4.

Phalaropodidae

Phalaropus lobatus (Linnaeus)

Red-necked Phalarope

Rare visitor (August-April); in ones or twos. A few reports since 1979 from Rottnest I. (Government House Lake) and one from the Swan River estuary (Pelican Point). Also an unacceptable record of *P. fulicarius* from Rottnest I.

Burhinidae

Burhinus grallarius (Latham)

Bush Stone-curlew

At present rare or extinct. Lightly wooded or partly cleared country. One breeding report: egg (WAM A6698) collected at Beechborough c. October 1949. Said by Gould to be common at the Swan River (presumably based on John Gilbert's experiences in 1839-43), and still moderately common early this century before the arrival of the fox (which took over one of its major habitats, viz. open coastal scrubs and beaches).

Glareolidae

Stiltia isabella (Vieillot)

Australian Pratincole

Very rare visitor. Two observed at Karakin Lakes on 1 December 1981 (Jaensch 1982, *West. Aust. Bd Notes* No. 21: 6), and one at Pelican Point, Swan River, on 11 December 1972 (Lane 1973, *West. Aust. Nat.* 12: 165).

Glareola maldivarum Forster

Oriental Pratincole

Scarce visitor (mid-November to late April); in ones, twos or small flocks (up to 10). Mainly shores of freshwater lakes and swamps; also the Swan River estuary (Pelican Point) and Garden I.

Laridae

Stercorarius skua lonnbergi (Mathews)

Great Skua

Moderately common visitor (April-November, mostly July-August); usually single or in loose aggregations (up to 19). Inshore seas, especially about ships in Fremantle Harbour, Gage Roads and Bunbury Harbour. Two birds banded in the Kerguelen Is and one in the Crozet Is have been recovered locally.

Stercorarius pomarinus (Temminck)

Pomarine Skua

Uncommon visitor (October-June, mostly December-March); usually single, occasionally in twos. Inshore seas; also one record from a near-coastal lake (Cooloongup).

Stercorarius parasiticus (Linnaeus)

Arctic Skua

Moderately common visitor (August-June, mostly November-April); usually single. Inshore seas; attracted to fishing Bridled and Crested Terns.

[*Stercorarius longicaudus* Vieillot

Long-tailed Skua

Possibly a rare visitor. Two reported on 22 March 1987 'well west of Fremantle' in c. 31°S, 110°E (Ross 1987, *RAOU Newsl.* No. 72: 7).]

Larus dominicanus Lichtenstein

Kelp Gull

Vagrant. A specimen (WAM A2701) was collected at Claremont on 22 August 1924 (Ford 1965, *West. Aust. Nat.* 9: 172). One (WAM A9657) collected by J.R. Ford on Seal I. on 29 August 1966 had been banded as a nestling on Moon I., NSW, on 12 December 1962; it was seen on several occasions in Shoalwater Bay, the first on 18 June 1966.

Larus pacificus georgii Vigors

Pacific Gull

Formerly scarce or uncommon, now regionally extinct. A few birds (mostly in immature plumage) were seen in the Warnbro Sound/Shoalwater Bay/Garden I. area in the late 1930s (Sedgwick 1940, *Emu* 40: 148), early 1940s (Serventy and White 1943, *Emu* 43: 81) and the 1950s and early 1960s (G.M. Storr MS). The last record was B.T. Clay's observation of four immatures at Garden I. on 8 January 1963. The basis for Serventy, Serventy and Warham's assertion (1971,

The Handbook of Australian Sea-birds, p. 197) that it bred on Lancelin, Edward and Penguin Is is unknown. Sedgwick (*supra cit.*) was informed that a pair once nested on Seal I. Abbott (1977, *West. Aust. Nat.* 13: 197) attributes its decline to the recent increase in Silver Gulls; another factor is the increased number of people visiting the islands (this species is less tolerant of disturbance than most birds).

Larus pipixcan Wagler

Franklin's Gull

Vagrant. One observed by Dixon (1958, *Emu* 58: 71) on 10 August 1957 in the Leschenault Estuary.

Larus novaehollandiae novaehollandiae Stephens

Silver Gull

Scarce to very common (most numerous within 30 km of Fremantle, least on coasts remote from islands or human habitation); in ones, twos or flocks (up to 300), occasionally much larger flocks (up to 5000) when flying to roosts. Islands, coasts, estuaries and certain lakes (Monger, Herdsman, Perry, Bibra, Walyungup); casual at Queens Gardens, Shenton Park Lake, Thomsons Lake, Cooloongup Lake and Benger Swamp. Attracted to breeding terns, garbage dumps (as far inland as Maddington), spiny lobster boats and processing plants, fishing boats, shipping, dredge and sewage outlets, flooded rivers, inundated pastures, flying ants (June-August), kelp-fly maggots in cast-up seaweed, parks, sports grounds, light-attracted insects and reservoirs (for bathing). Breeding mainly on islands, viz. Lancelin, Edward, Rottnest (including main island at King Head, City of York Bay, Armstrong Beach, between Little Parakeet and Geordie Bays, at Point Clune, east end of The Basin, around Bathurst Point, beside Causeway, islets in Garden, Herschell and Baghdad Lakes and between Government House Lake and the Serpentine, and around Lake Baghdad and Barker Swamp; middle rock of Cathedral Rocks, Crayfish Rock, Armstrong Rock, Parakeet I., stack in Geordie Bay, Clune Rock, Monday Rock, Duck Rock, Phillip Rock, Joan Rock, Dyer I., stack off Salmon Point and Green I.), Mewstone, Carnac (including West and Flat Rocks), Garden (formerly on cliffs), islet off Cape Peron, White Rock, Bird I., Gull Rock, Seal I., west and middle Shag Is, islet north-east of Penguin I., Penguin, Passage Rock and north-western of The Sisters; also on Swan River estuary (on moored boats and derelict baths at Crawley) and Walyungup Lake: mid-March to mid-December, mainly April-June and August-October; C/(1214), 2(2747), 3(312), 4(1). The clinal nature of variation in this region indicates that, unlike south-east Australian birds, local birds do not move very far. Of the numerous juveniles banded on Green and Carnac Is and at Walyungup Lake only two have been recorded from more than 40 km away, viz. one at Jurien Bay and one at Bunbury.

Anous stolidus pileatus (Scopoli)

Common Noddy

Accidental. One authentic record: a specimen (WAM A18875) collected at Busselton on 18 July 1948 during a wreck of Lesser Noddies. Some of the other records, e.g. those of F.L. Whitlock, could have been based on Lesser Noddies mistaken for 'immature' Common Noddies.

Anous tenuirostris melanops Gould

Lesser Noddy

Commonly found dead or exhausted on or near mainland coast from Yanchep Beach south to Dunsborough after winter storms (mid-July to late August); also once derelict after a tropical cyclone (11 February 1937) and once in mid-November. A bird banded as a nestling on Pelsaert I., Houtman Abrolhos, on 5 December 1963 alighted on a ship c. 120 km NNW Perth during a gale on 17 May 1969.

Sterna nilotica macrotarsa Gould

Gull-billed Tern

Uncommon visitor (late October to June); in ones, twos or small flocks (up to 30). Lakes (Karakin, Forrestdale, Coo loongup) and estuaries (Swan River, Peel Inlet).

Sterna caspia Pallas

Caspian Tern

Moderately common; in ones, twos or small parties, occasionally flocks (up to 38). Coastal seas and estuaries (Swan River [mainly September to late April], Peel Inlet, Leschenault Inlet); casual on Lakes Beermullah, Coo loongup and Richmond. Breeding on islands, viz. Lancelin, Edward, Rottnest (including Parakeet, Dyer and Green Is, Crayfish, Armstrong and Clune Rocks, and islet in Herschell Lake), Carnac (including Flat Rock), Bird, Seal, Shag and ? Penguin: July to mid-November; C/1(24), 2(26), 3(6); usually nesting singly, occasionally in loose colonies (up to 9 nests).

Sterna bergii Lichtenstein

Crested Tern

Moderately common to very common (most numerous in vicinity of islands); usually fishing singly, usually resting and roosting in flocks (up to 200). Coastal seas (mostly within 3 km of land); also estuaries, viz. Moore River, Swan River (upstream to East Perth, rarely to Maylands), Canning River (upstream to River-ton), Peel Inlet and Leschenault Inlet. Breeding colonially, in compact groups of up to 300 nests on islands, viz. Lancelin, Edward, Rottnest (including Dyer I. [from 1839 until recently], islets in Lake Herschell [since 1965] and Lake Baghdad [since 1981]), Carnac and Seal: late March to November (until recently only breeding in winter and spring; for autumn breeding see Dunlop 1985, *Aust. Wildl. Res.* 12: 95-102); C/1(606). Birds banded on Rottnest I. have been recovered on Rottnest I., at City Beach and near Kalbarri.

Sterna hirundo hirundo Linnaeus

Common Tern

Very rare visitor. Two authentic records: a bird (WAM A7844) banded as nestling in Sweden in July 1955 and found exhausted on Coogee Beach on 7 January 1957; and one in breeding plumage at Mandurah on 5 April 1983 (R.P. Jaensch, pers. comm.). Other reports of Common Terns (single birds and flocks of up to 37) in Swan River estuary and at Mandurah seawall from September to April lack description and subspecific identification.

Sterna paradisaea Pontoppidan

Arctic Tern

Scarce passage migrant (early October to mid-November and mid-May to early June); in ones or twos. Observed on coasts, in Swan River estuary and at Lake Joondalup, mostly after westerly gales. Birds banded in Sweden and at Murmansk have been recovered locally.

Sterna dougallii Montagu

Roseate Tern

At present uncommon resident or breeding visitor; usually in small flocks. First recorded in July 1939, a beach-washed specimen (WAM A5029) from Scarborough; next was a specimen (WAM A7827) found at Applecross in May 1956. In May and June 1958 and May and July 1959 Storr and Ford (1962, *Emu* 61: 293) observed small parties in nuptial plumage at several localities in Cockburn Sound. On 5 June 1966, J.R. Ford saw two at Seal I., one carrying a fish. There was a considerable visitation to Cockburn Sound in February-July 1982, including a bird carrying a fish off Rottnest in early May; this movement took them as far south as Mandurah and Peel Inlet, and breeding was recorded on Second Rock. Subsequently the terns have returned every autumn, including birds copulating on the Mandurah seawall on 12 April 1983 (Jaensch 1983, *West. Aust. Bd Notes* No. 26: 10). Breeding reported on Rottnest I. in late winter 1985.

Meanwhile summer breeders had become established in far north of region. Two birds in nuptial plumage were observed by Ford (1965, *Emu* 64: 131) near Edward I. in January 1962, and eight in nuptial plumage at Lancelin I. in November 1962; he saw four on Lancelin I. in December 1965. Breeding was first reported by Dunlop (1979, *West. Aust. Nat.* 14: 118): c. 50 nests on Lancelin I. in November 1975, mostly with one or two eggs, one with three.

Sterna anaethetus anaethetus Scopoli

Bridled Tern

At present very common visitor (late September to early March, exceptionally to mid-April); feeding in loose aggregations (up to 25). Blue-water seas, mainly well offshore, as far south as Cape Bouvard. Breeding on numerous rocky islets and in cliffs of larger islands, viz. Lancelin, Edward, Two Rocks, ? Little (off Whitford), Rottnest (including Parakeet and Dyer Is and Cathedral, North Point, Clune, Monday, Duck, Phillip and Joan Rocks), Carnac, Garden (North Rock),

Arch Rock, rocks off Cape Peron, Bird, Seal, Shag, Penguin, First Rock, Second Rock and Tub Rocks: late October to early January; C/1 (almost invariably), 2 (very rarely).

The species apparently arrived in second half of last century. J. Gilbert did not record it on his visit to Rottneest I. in December 1839 (or anywhere south of the Houtman Abrolhos in the early 1840s). A.J. Campbell found them nesting on Phillip and Duck Rocks (but not Dyer I.) in November 1889. By 1901 they were breeding in the Safety Bay area, where they were still uncommon in 1939. Over the last forty years they have continuously increased their numbers and have spread to many new nesting areas, including the main island of Rottneest.

Sterna fuscata nubilosa Sparrman

Sooty Tern

Accidental. Several birds have been found dead or dying on beaches south to Bunbury and occasionally inland (Bassendean, Mt Lawley, Claremont, South Perth, Cannington) after gales in summer-autumn, especially those of 10-13 November 1946.

Sterna hybrida javanica Horsfield

Whiskered Tern

Frequent but irregular visitor (all months). Scarce to common (most numerous in April-June and September-December); in ones, twos or flocks (up to 827). Estuaries, lakes (fresh or salt) and occasionally swamps.

Sterna leucoptera Temminck

White-winged Black Tern

Visitor from Palaearctic (November to early May, mostly February to early April and in association with tropical cyclones), sometimes in very large numbers (1917, 1956) but generally in small to moderately large numbers (1918, 1938, 1960, 1970, 1978, 1981, 1983, 1984-85, 1986); usually in flocks (up to 1000). Mainly freshwater lakes and swamps, occasionally estuaries, samphire and short-grass flats and lucerne fields; attracted to emerging dragonflies (*Hemianax papuensis*) and swarming grasshoppers.

Report (Jacobs 1975, *West. Aust. Nat.* 13: 61) of a Black Tern *S. nigra* Linnaeus has generally not been accepted.

[*Sterna (albifrons) sinensis* Gmelin

Little Tern

Possibly a very rare visitor from Palaearctic. An unconfirmed observation by G.M. Storr of a flock of seven, including three birds in nuptial plumage, at Perkin Point, Garden I. on 27 June 1959.]

Sterna nereis nereis (Gould)

Fairy Tern

Common visitor (September to mid-May, exceptionally to early June, mostly

October to early March); usually fishing singly or in small parties, resting in flocks (up to 50). Seas close to land and south to Mandurah, estuaries (Swan River [upstream to the Causeway], Peel Inlet) and near-coastal lakes (Richmond, Cooloongup, Walyungup). Breeding colonially (up to 200 nests) on mainland sandspit opposite Edward I. (before 1950), in Swan River estuary (South Perth in 1930, Pelican Point in 1984), on Rottnest I. (mainly shores of Baghdad, Herschell and Government House Lakes; also airstrip and sea beaches), Carnac I. (rarely), Garden I. (Brown Bay), Fairy Tern I. (recently), Safety Bay (mainland beach before 1945), islets in Lake Walyungup, and Mandurah (dredge-spoil behind seawall): late October to early February; C/1(449), 2(204). Nestlings banded at Lake Walyungup have been recovered or seen at Fisherman Is, Pelican Point (Swan River), Kwinana and Mandurah.

Columbidae

Columba livia livia Gmelin

Domestic Pigeon

Feral in farmlands and urban areas (including Perth City and Fremantle) and formerly on Rottnest I. (exterminated in 1890) and Garden I. Common; in ones, twos or flocks. Open areas (including burnt country) close to nest sites, especially old buildings; attracted to fallen wheat around silos and along rail tracks. One breeding report (undated): C/2.

Streptopelia roseogrisea roseogrisea (Sundevall)

Barbary Dove

Formerly feral in the Wattle Grove area; the 15 or so birds were destroyed in 1975 by the Agricultural Protection Board (Long 1981, *Introduced Birds of the World*, p. 218).

Streptopelia chinensis tigrina (Temminck)

Spotted Dove

Range. Vicinity of Perth (from Wanneroo and Middle Swan south to Rockingham, Forrestdale and Armadale) and at Mandurah and on Rottnest and Garden Is. Casual elsewhere (from Yanchep south to Harvey).

Status etc. Exotic species, released by South Perth Zoo from 1898* onwards: 'plentiful in Perth and nearer suburbs' by 1920 (W.B. Alexander) and established on Rottnest and Garden Is by 1937. Moderately common; in ones, twos or small parties (up to 5). Well-wooded country, including leafier suburbs of Perth. Breeding from August to early January, also June; C/2(10).

Streptopelia senegalensis senegalensis (Linnaeus)

Laughing Dove

Range. From Yanchep and Beermullah south to Bunbury and Dardanup; also Rottnest and Garden Is.

Status etc. Exotic species, released by South Perth Zoo from 1898 onwards; by

1920 plentiful in Perth and extending further into surrounding country than Spotted Dove (W.B. Alexander); reaching Rottneest I. in 1930 and established on Garden I. by 1940. Uncommon to very common (most numerous in suburbs of Perth); usually in pairs or small flocks. Lightly wooded country, especially in urban areas and around farmhouses. Breeding from July to March; C/2(43). For homing ability see Stranger (1968, *West. Aust. Nat.* 11: 4-14).

Phaps chalcoptera (Latham)

Common Bronzewing

At present locally common but generally uncommon and patchily distributed; in ones, twos or small parties (up to 7 when feeding, up to 15 at water). Well-wooded country (especially acacia scrubs) in vicinity of fresh water; also partly cleared farmlands. Breeding from late August to mid-October; C/2(4). In colonial times very common (H.W. Bunbury). By 1900 scarce (B.H. Woodward), but beginning to increase greatly c. mid-1930s (D.L. Serventy).

Phaps elegans (Temminck)

Brush Bronzewing

Formerly widespread in coastal and inland scrubs, but becoming extinct on Rottneest I. and most of mainland by 1920s. The only recent sightings were at Yanchep National Park (1982), Garden I. (1983), Preston Beach (1959) and 13 km W Busselton (1959).

Ocyphaps lophotes (Temminck)

Crested Pigeon

Recently established in north-eastern farmlands south to Muchea. It first appeared around Regans Ford in 1964, Beermullah in 1969 and Gingin in mid-1970s. Casual further south: Mussel Pool (1975), Bibra Lake (1956), Casuarina (1986), Forrestdale (1978). It is unknown whether the small colony west of Herdsman Lake (first noticed in 1960) was derived from wild stock or escapees; these birds, together with a flock of Galahs, were fed on a vacant lot by the neighbouring householder in Hale Road and had become a tourist attraction by the 1970s.

Psittacidae

Trichoglossus haematodus novaehollandiae (Gmelin)

Rainbow Lorikeet

At present moderately common in western suburbs of Perth, in pairs or small flocks (up to 12). Attracted to flowering lemon-scented gum *Eucalyptus citriodora*, marri *E. calophylla*, red-flowering gum *E. ficifolia* and coral tree *Erythrina indica*. First noticed in March 1968 (Storr 1973, *West. Aust. Nat.*

* Or earlier, if the Bar-shouldered Doves, said by B.H. Woodward (1902, *Western Australian Year-book for 1900-01*. 1: 249) to be common in South Perth and adjacent bush at the turn of the century, were in fact Spotted Doves.

12: 116) and presumably descended from escapees. Recently observed over Perth City and at Maylands. Two birds were seen at Harvey in January-March 1964 (Sedgwick 1973, *West. Aust. Nat.* 12: 134).

[*Trichoglossus haematodus rubritorquis* Vigors and Horsfield

Status uncertain. Reported by E. Sedgwick (1942, *Emu* 41: 288), in pairs mainly at flowering banksias at Lake Walyungup and East Rockingham from May 1938 to September 1940. Perhaps the lorikeets at Safety Bay, reported by Corfe (1977, *West. Aust. Nat.* 13: 209) and Smith (1978, *West. Aust. Nat.* 14: 75) were descendents of these birds.]

[*Glossopsitta concinna* (Shaw)

Musk Lorikeet

Formerly a few in south-western suburbs of Perth (Alfred Cove/Attadale/Point Waylen area), first noticed in September 1975 (Corfe 1977, *West. Aust. Nat.* 13: 209) and presumably consisting of or descended from birds escaped or released from an aviary. Not recorded recently despite intensive searches since 1981 (R.P. Jaensch).]

Glossopsitta porphyrocephala (Dietrichsen)

Purple-crowned Lorikeet

Non-breeding visitor (all months) to coastal plain; casual on Rottnest I. Locally moderately common from February to June when marris flowering, and from October to December when flooded gums flowering, but generally scarce or absent; usually in small parties. Attracted to flowering marri *Eucalyptus calophylla*, flooded gum *E. rudis*, tuart *E. gomphocephala*, lemon-scented gum *E. citriodora* and *Banksia attenuata*.

Polytelis anthopeplus westralis Mathews

Regent Parrot

Status uncertain, but apparently an irregular non-breeding visitor from the semi-arid zone. Scarce to common; usually in pairs or flocks. Mainly partly cleared farmlands; also tuart *Eucalyptus gomphocephala* woodlands.

Before 1940 there were only a few records, widely scattered in time and space: single specimens from Vasse (1897), Perth (1898) and Bunbury (1923), and sightings east of Maddington (1922) and at Yanchep (1928) and Bassendean (1930). From 1940 to 1965 it was seasonally common in north-eastern farmlands from Gingin south to Guildford, in flocks of up to 100 or more. A smaller and more southerly visitation (from Melville and Welshpool south to Coolup) began in 1943 and lasted until 1959. From 1966 to 1969 flocks were commonly seen in the Mundijong, Pinjarra and Mandurah districts. Since 1982 it has been frequently observed (including a flock of 70) over a wide area from Gingin south to Ludlow, but mainly in farmlands from Baldvis and Forrestdale south to Mandurah and Pinjarra.

Platycercus zonarius (Shaw)

Ring-necked Parrot

Range. Throughout the mainland. Casual on Rottnest and Garden Is. The southern half is occupied by the subspecies *P. z. semitorquatus* (Quoy and Gaimard); north of Rockingham and Armadale the birds are hybrids between *P. z. semitorquatus* and *P. z. zonarius*, agreeing with the first in size and the second in voice, and being variably intermediate in coloration.

Status etc. Very common; usually in pairs or small parties. Favouring the less dense eucalypt woodlands and forests, especially partly cleared farmlands and vicinity of orchards; also country towns and (since the late 1960s and early 1970s) many suburbs of Perth; attracted to seeding marris *Eucalyptus calophylla* and blackboys *Xanthorrhoea preissii*, fruiting almonds and white cedars *Melia azedarach* and flowering coral trees *Erythrina indica*. Breeding in August and September; C/5(1).

Platycercus spurius (Kuhl)

Red-capped Parrot

Range. Greater part of mainland, but not far north-west (north and west of Yankech National Park, Gingin Brook East, Beermullah and Regans Ford).

Status etc. Uncommon to common (most numerous in southerh half and close to Darling Scarp); usually in pairs or small parties. Mainly eucalypt forests and woodlands (especially of marri *E. calophylla* and tuart *E. gomphocephala*); attracted to seeding marris, fruiting almonds and flowering coral trees *Erythrina indica*. Breeding from late August to mid-October; C/4(1), 5(1).

Platycercus icterotis icterotis (Kuhl)

Western Rosella

Range. Greater part of mainland but not extreme north-west (north and west of the lower Moore River).

Status etc. Rare to uncommon (most numerous in south and close to Darling Scarp); usually in pairs. Mainly eucalypt woodlands (especially of flooded gum *E. rudis* and wandoo *E. wandoo*); also lakeside melaleucas.

Neophema elegans (Gould)

Elegant Parrot

Range. Greater part of mainland from West Gingin south nearly to Busselton (Ruabon).

Status etc. At present uncommon visitor (mainly in winter); in ones, twos or flocks (up to 130). Mainly partly cleared farmlands, especially in eastern zone; also open country in vicinity of lakes and swamps. One breeding report (Mussel Pool): spring 1975.

Neophema petrophila (Gould)

Rock Parrot

Range. Lancelin I. and opposite mainland, and Rottnest I. Casual elsewhere on

mainland coast (? Mullaloo, Cottesloe, Leighton, North Mole, Cape Peron, beaches north of Mandurah, Bunbury) and on Carnac I.

Status etc. Very common on Lancelin I. and formerly on Rottnest I. (numbers greatly reduced by capture and sale of young birds in 1940s and 1950s); in ones, twos or flocks (up to 100). Breeding on Lancelin I. and Rottnest I. (presumably now only on islets off east end, formerly in main island cliffs and on Parakeet and Green Is and stacks off west coast): late August to early November; C/2(1), 3(1), 4(8), 5(4), 6(2). For breeding and other behaviour on Lancelin I. see Warham (1955, *Emu* 55: 81-84).

[*Pezoporus wallicus flaviventris* North Ground Parrot

Possibly occurring on coastal plain in colonial times, for Gould (1865, *Handbook Bds Australia* 2: 86) cited the Perth aboriginal name of this parrot.]

Melopsittacus undulatus (Shaw) Budgerigar

Status. Very infrequent visitor to northern quarter (south to Osborne Park), sometimes in considerable numbers, e.g. from mid-May to mid-June 1951 when flocks of 25-300 were observed in paddocks near Gingin, at Yanchep and over Lake Goollelal.

Nymphicus hollandicus (Kerr) Cockatiel

Status etc. Recently an increasingly frequent visitor to eastern zone south to Kelmscott; also observed at Wembley, Hollywood and Boyanup. Scarce; in ones, twos or small parties (up to 5). Reported in February and July 1965, March 1970, February 1978 and 1979, August 1983, January and February 1986 and October 1987.

Calyptorhynchus latirostris Carnaby Carnaby's Cockatoo

Range. Throughout the mainland. Casual on Rottnest I.

Status etc. Visitor (all months) and resident. Common; usually in pairs or flocks (up to 2000). Mainly pine plantations, eucalypt woodlands and forests, and proteaceous scrubs and shrublands; attracted to seeding *Pinus* spp. and flowering *Dryandra sessilis*. Breeding in small numbers, mainly in far north-east (Regans Ford south to Gingin) but also sparingly as far south as Bunbury. Most birds presumably come from further north or east, e.g. birds banded at Manmanning and recovered at Beermullah, Yanchep and Gngangara (Saunders 1980, *Aust. Wildl. Res.* 7: 259).

Calyptorhynchus baudinii Lear Baudin's Cockatoo

Range. Eastern zone, north to Midland.

Status etc. Visitor (May-September). Moderately common south of Harvey, scarce or uncommon further north; usually in flocks (up to 300). Eucalypt forests; attracted to seeding marri *Eucalyptus calophylla*, *Banksia grandis* and *B. littoralis*. For food see Saunders (1974, *Aust. Wildl. Res.* 1: 65).

Calyptrorhynchus magnificus naso Gould Red-tailed Black Cockatoo

Range. Eastern zone, north to Gingin. Casual further west.

Status etc. Rare visitor (November-May), presumably from adjacent Darling Range; in small flocks (up to 30). Eucalypt forests and woodlands; attracted to seeding marri *Eucalyptus calophylla* and presumably *Allocasuarina fraseriana*.

Cacatua roseicapilla Vieillot Galah

Range. Northern quarter, south to South Fremantle and Byford. Casual further south (Mandurah district). Vagrant on Rottne I.

Status etc. At present moderately common in eastern zone (south to Guildford) and western zone (south to Wanneroo), uncommon or scarce further south; usually in pairs or small flocks, rarely very large flocks (up to 700). Lightly wooded country, especially farmlands; attracted to spilt grain and to flowering *Arctotheca populifolia* in coastal dunes.

First recorded c. 1918, and still only a very rare visitor by 1940, after which visits became much more frequent. Established at Gingin by 1955, at Bullsbrook by 1960 and at Swan View by 1965.

Cacatua sanguinea Gould Little Corella

The Little Corellas (subspecies unknown) observed in and near Perth Metro Area presumably originated from birds escaped or released from aviaries. Wandering pairs and flocks (up to 300) observed in western suburbs (Lake Monger, Herdsman Lake, Perry Lakes, Kings Park, Nedlands, Claremont, Swanbourne, Alfred Cove, Bicton) since early 1960s, and more recently at Guildford (since 1973), Middle Swan (1975), Warbrook (1977), Muchea (nesting in wandoo, 1977), west of Wanneroo (1977), and Kelmscott (1980).

Cacatua pastinator (Gould) Western Long-billed Corella

Before and during colonial times large flocks visited the vicinity of the Swan River. C. Fraser saw them eating orchid bulbs near present-day Gloucester Park in March 1827 (Hay 1906, *West. Aust. Nat. Hist. Soc.* No. 3). Pioneer farmer G.F. Moore noted them as very numerous about his homestead near Guildford in 1831, and as a pest in his wheatfield on 23 June 1835 (Alexander 1918, *J. Proc. R. Soc. West. Aust.* 3: 41). There is no subsequent record in the region, although they occur just beyond our northern limit (at 13 km N Regans Ford and northwards).

Cacatua leadbeateri (Vigors)

Major Mitchell's Cockatoo

Vagrant. Coulson (1969, *Fauna Bull.*, Dept of Fisheries and Fauna, 3 (3): 21) saw two at Midland in mid-June 1969. What were probably the same two birds were observed by McMillan (1970, *West. Aust. Nat.* 11: 146) at Guildford on several occasions between 7 July and 8 September 1969; they attempted to nest in a hole 12 m up in a flooded gum.

Cacatua galerita galerita (Latham)

Sulphur-crested Cockatoo

Small colonies in eastern zone, established in the Pinjarra district (at Carrabungup, 6-10 km S Pinjarra, Meelong, Coolup, Waroona and Point Grey) by 1955 and in the Midland district (Caversham, Middle Swan, West Swan, Guildford and the lower Helena) by 1964, presumably from liberated east Australian birds. In early 1960s a few were attached to flocks of Little Corellas at Perry Lake and Lake Claremont. Casual elsewhere (Muchea, Bullsbrook, Herdsman Lake, Gosnells, Kelmscott, Armadale, Byford, Mundijong, Serpentine).

Cuculidae

Cuculus pallidus (Latham)

Pallid Cuckoo

Range. Throughout the mainland; also Garden I. during northward passage. Casual on Rottnest I.

Status etc. Visitor, arriving from north usually in June, commonly in late May, seldom as early as mid-April; adults leaving usually in November, sometimes as late as late December; juveniles occasionally remaining with fosterers in January and February, rarely until early March. Common in some years but generally uncommon to moderately common; usually in ones or twos. Lightly wooded country, including suburbs of Perth. Breeding from August to October, occasionally to December; parasitising Clamorous Reed Warbler (1 record), Singing Honeyeater (4), White-naped Honeyeater (1), New Holland Honeyeater (1), Western Spinebill (3), Little Wattlebird (4) and Red Wattlebird (12).

Cacomantis flabelliformis flabelliformis (Latham)

Fan-tailed Cuckoo

Range. Greater part of region, including Rottnest I.

Status etc. Uncommon to moderately common visitor, arriving in April (exceptionally in late February), presumably from deep south-west, many birds evidently leaving in July or August but a good number remaining until November and breeding here. Well-wooded country. Breeding from August to October; parasitising Brown Thornbill (1 record), White-browed Scubwren (1), Clamorous Reed Warbler (1), Grey-breasted White-eye (1).

Chrysococcyx osculans (Gould)

Black-eared Cuckoo

Said to be a very rare visitor to northern half (south to Coolup) with a breeding report from the mouth of the Moore River [perhaps a lapse for Murchison River], but only one of the five records is properly documented, viz. a bird caught at Yokine on 16 May 1976 (Nicholls *et al.* 1977, *West. Aust. Nat.* 13: 205).

Chrysococcyx basalis (Horsfield)

Horsfield's Bronze Cuckoo

Range. Greater part of mainland south nearly to Busselton (Ruabon); also Rott-nest I. during northward passage.

Status etc. Visitor (mid-June to mid-January, juveniles occasionally remaining until early March). Uncommon to moderately common in northern quarter, scarce further south. Lightly wooded country. Breeding from July to October; parasitising Scarlet Robin (4 records), Brown Thornbill (1), Western Thornbill (1), Yellow-rumped Thornbill (1), White-browed Scrubwren (1), Red-winged Fairy-wren (1).

Chrysococcyx lucidus plagosus (Latham)

Shining Bronze Cuckoo

Range. Greater part of mainland; also Rott-nest I. during southward passage.

Status etc. Visitor (arriving between late July and early September, very rarely in April, May or June; and leaving between late November and early January, juveniles occasionally remaining until early March). Common; usually in ones or twos. Well-wooded country. Breeding from late August to December (mainly October-November); parasitising Western Flyeater (5 records), Brown Thornbill (11), Western Thornbill (4), Yellow-rumped Thornbill (36), White-browed Scrubwren (1), Splendid Fairy-wren (2). For notes on breeding see Ford (1963, *Emu* 63: 197).

Strigidae

Tyto alba delicatula (Gould)

Barn Owl

Range. Throughout the mainland; also Carnac, Seal and Penguin Is.

Status etc. Uncommon visitor (late March to mid-October, mostly April-August); usually single. Lightly wooded country, especially farmlands; also Perth and suburbs.

Tyto novaehollandiae novaehollandiae (Stephens)

Masked Owl

Range. Greater part of mainland, north to Yanchep.

Status etc. Scarce visitor or passage migrant (9 records in March-May and one in August); usually single.

Ninox connivens connivens (Latham) Barking Owl

Status etc. Formerly a rare resident, presumably in waterside melaleuca forests, J. Gilbert heard one calling near Lake Coogee on 25 October 1842, and T. Ostle collected one (WAM 4888) at Herdsman Lake on 8 May 1902.

Ninox novaeseelandiae boobook (Latham) Boobook Owl

Range. Greater part of mainland; also Rottneest and Garden Is during passage.

Status uncertain (no breeding records). Mainly a moderately common passage migrant (March-May and July-October), but possibly also an uncommon resident. Well-wooded country, including Perth and suburbs.

Podargidae

Podargus strigoides brachypterus Gould Tawny Frogmouth

Range. Greater part of mainland.

Status etc. Resident and ?autumn visitor (February to early May). Common; in ones, twos or family parties. Well-wooded country. Breeding from August to October; C/2(14).

Aegothelidae

Aegotheles cristatus cristatus (White) Australian Owlet-nightjar

Status uncertain (no records from May to September). Scarce. Well-wooded country, especially in eastern zone. Two undated breeding records: young bird from the Harvey River (WAM 889) and an egg from Boyanup (WAM A4886).

Caprimulgidae

Eurostopodus argus Hartert Spotted Nightjar

Range. Greater part of region, including Garden I.

Status etc. Uncommon visitor (late February to July). Sparsely wooded country, especially near-coastal heathlands.

Apodidae

Apus pacificus pacificus (Latham) Fork-tailed Swift

Visitor (late December to April, mostly March). At times appearing in thousands, e.g. in March 1956 (Gentilli 1956, *West. Aust. Nat.* 5: 86), but generally uncommon to moderately common; usually in flocks (up to 400) or accompanying

Tree Martins. Visits usually associated with thundery or wet weather, especially before and after tropical cyclones. During hot easterlies it follows aerial insects out over inshore seas and Rottnest, Carnac and Garden Is.

Alcedinidae

Dacelo gigas (Boddaert)

Laughing Kookaburra

Range. Greater part of region, including Garden I.

Status etc. Naturalised exotic. Common; in ones, twos or family parties. Well-wooded country. Breeding from August to October; C/3(6), 4(2).

Hundreds of Victorian birds were released from 1897 to 1912 at South Perth Zoo and elsewhere, including Gingin in 1903. By 1919 they were well-established in the Swan River and Vasse River districts.

Halcyon pyrrhopygia Gould

Red-backed Kingfisher

Casual visitor to extreme north-west of region, pair successfully breeding in sandpit 9 km S Lancelin in November 1985 (*West. Aust. Bd Notes* No. 37: 8). Vagrant further south (South Belmont, 1956-57).

Halcyon sancta sancta Vigors and Horsfield

Sacred Kingfisher

Range. Greater part of region, including east end of Rottnest I. Also during passage on Lancelin, Carnac, Garden, Bird, Seal, Shag and Penguin Is.

Status etc. Mainly a spring-summer visitor or passage migrant; commonly overwintering on Rottnest I. and near mainland coast, rarely inland. Moderately common to common; usually in ones or twos. Wooded country, especially near water. Breeding in late October and November; C/3(2), 4(4), 5(3). Local birds include migrants from eastern Australia, e.g. one banded as fledgling on 31 December 1964 near Chain-of-Ponds, SA, and found alive at Tuart Hill on 14 March 1968 (Purchase 1968, *Fauna Bull.* 2 (2): 28).

Meropidae

Merops ornatus Latham

Rainbow Bee-eater

Range. Greater part of region, including east end of Rottnest I.

Status etc. Visitor (September to mid-April, mainly arriving in late September or early March) and passage migrant. At present common; in ones, twos or small parties on southward passage, in pairs when breeding, usually in small parties or flocks (up to 50) after breeding and during northward passage. Lightly wooded country. Breeding from late October to early December (? late December in far south); C/4(3), 5(9).

Rare around Perth in colonial times (J. Gould) and still local by 1920 (W.B. Alexander). In the late 1970s it considerably increased its numbers and breeding range in the Perth Metro Area and colonised Rottne I.

Hirundinidae

Cheramoeca leucosterna (Gould)

White-backed Swallow

Range. Northern third of mainland, south to Lake Coo loongup and inland to Regans Ford, West Gingin, Middle Swan, Maida Vale, Gosnells and Forrestdale Lake.

Status etc. At present uncommon to common (most numerous in far north-west, south to Yanchep, least in eastern zone); in ones, twos or small parties (up to 5). Open or sparsely wooded sandy country, especially in western zone. Breeding from late September to mid-December; C/3(2), 4(9), 5(9), 6(3). Apparently not occurring in region before the proliferation of nest sites (road cuttings, sandpits etc.) following European settlement. First recorded in 1902, when Milligan (1903, *Emu* 3: 21) observed a few in company with Tree Martins at Yanchep and collected two of them. By 1957 it was well established in far north-west, south nearly to Yanchep (Ford 1965, *West. Aust. Nat.* 10: 8). In 1969 it nested near Wanneroo (Sinagra 1969, *Fauna Bull.* 3 (3): 49). By 1978 it had crossed the Swan River and was nesting at Leeming (Kolichis 1979, *West. Aust. Nat.* 14: 131).

Hirundo rustica gutturalis Scopoli

Barn Swallow

Very rare summer visitor from north-eastern Asia. One seen among Welcome Swallows at Thomsons Lake, 8-11 January 1986 (Burbidge 1986, *West. Aust. Bd Notes* No. 37: 1).

Hirundo neoxena Gould

Welcome Swallow

Range. Much of mainland; also Lancelin, Edward, Rottne I, Carnac, Garden, Bird, Seal, Shag and Penguin Is.

Status etc. Moderately common; in ones, twos or small parties, occasionally larger aggregations in off-season (late December to July). Open or sparsely wooded country along rocky coasts, in cities and towns and about farmhouses and fresh water (including dams); attracted to midges emerging from swamps and lakes and to kelp flies over stranded seaweed. Breeding from mid-August to early December; C/2(2), 3(10), 4(12); nesting in coastal limestone (under overhanging cliffs or in caves), beneath verandas and bridges and in out-buildings and water-side trees (in holes or under leaning trunks).

Hirundo nigricans nigricans Vieillot

Tree Martin

Range. Greater part of region, including Rottnest I. Casual on Garden I.

Status etc. Migrant. Uncommon to very common (most numerous during summer and leisurely northward passage in early autumn, least in early winter); usually in pairs or small parties when breeding, larger aggregations (sometimes thousands) in off-season. Wooded country, especially in vicinity of water. Breeding on mainland (mostly in eastern zone) and since 1983 on Rottnest I. and since 1985 in tubular lamp-posts in Perth City: mid-August to early November; C/3(3), 4(3).

Hirundo ariel (Gould)

Fairy Martin

Scarce and infrequent visitor to eastern zone, south to Benger; usually in small parties. Open or sparsely wooded country, especially in vicinity of water. Breeding from August to November; nesting in small colonies (up to 20) under bridges and culverts and in claypits and small caves; breeding reported at Gingin (before 1928), Bullsbrook and Middle Swan (1964), Midvale (before 1964), Maylands and Belmont (1937), Forrestfield (1985), Armadale (c. 1964), Mundijong (c. 1929) and Benger (1961).

Motacillidae

Anthus novaeseelandiae australis Vieillot

Richard's Pipit

Range. Greater part of region, including Rottnest and Garden Is.

Status etc. Moderately common; in ones or twos, also small flocks (up to 12) from February to July. Sparsely vegetated country: coastal beaches and dunes, low and burnt heathlands, short grass, samphire, bare waterside flats and roadsides; attracted to kelp flies in stranded seaweed. Breeding from August to early December; C/2(1), 3(8).

Motacilla flava Linnaeus

Yellow Wagtail

Very rare summer visitor from north-eastern Asia. One observed at Herdsman Lake on 28 February and 8 March 1981 (Curry 1981, *Dept Conservation Environment Bull.* 105: 29).

Campephagidae

Coracina maxima (Rüppell)

Ground Cuckoo-shrike

Rare visitor (February-May) to eastern zone, from Gingin south to Waroona.

Coracina novaehollandiae (Gmelin)

Black-faced Cuckoo-shrike

Range. Greater part of region, including during migration Rottneest and Garden Is.
Status etc. Breeding visitor, winter visitor and passage migrant. Moderately common to common (most numerous in April-May and July-August); usually in ones or twos, commonly in small parties or flocks (up to 30) in January-September. Wooded country. Breeding from July to early December; C/1(1), 2(1), 3(2).

Lalage sueurii tricolor (Swainson)

White-winged Triller

Range. Greater part of region, south to 15 km E Busselton.
Status etc. Visitor (July-February, exceptionally to late May). Scarce to moderately common (most numerous in north); in ones, twos or small parties (up to 5). Wooded country. Breeding in October and November; C/2(5), 3(8).

Pachycephalidae

Petroica goodenovii (Vigors and Horsfield)

Red-capped Robin

Range. Northern three-quarters of mainland south to Coolup and Lake Clifton; also Rottneest I.

Status etc. Resident in eastern half of Rottneest I.; moderately common (formerly common), usually in ones or twos; mainly in teatree *Melaleuca lanceolata* woodland, but also in copses of *Acacia rostellifera* and plantations of tuart *Eucalyptus gomphocephala*; breeding from late July to mid-October; C/2(6), 3(1). Mainly a non-breeding visitor (February-July, mostly April-June) to coastal plain; rare to uncommon (much more numerous in northern quarter than further south), in ones or twos; occasional pairs remaining in spring and early summer to breed (reports from Kewdale, North Lake, Bibra Lake and Mundijong).

Petroica multicolor campbelli Sharpe

Scarlet Robin

Range. Throughout the mainland.

Status etc. Resident and non-breeding visitor (March-July). Formerly common, now locally common but generally uncommon to moderately common; usually in ones or twos. Mainly banksia and eucalypt woodlands, also waterside melaleucas. Breeding from August to November; C/2(8), 3(5); parasitised by Horsfield's Bronze Cuckoo (4 records).

Petroica cucullata (Latham)

Hooded Robin

Range. Far north, south nearly to Mullaloo and east nearly to Gingin. South-eastern outskirts of Perth from South Perth (formerly) and Forreestfield south

to Forrestdale. Formerly further south (specimen collected at Pinjarra in 1895 and at Harvey in 1901).

Status etc. Scarce or uncommon and patchily distributed; in ones or twos. Lightly wooded country, especially open banksia scrubs and burnt heathlands. One breeding report (Jandakot): c. October.

Eopsaltria australis griseogularis Gould

Yellow Robin

Range. Greater part of mainland. Casual on Carnac I.

Status etc. Resident and autumn-winter visitor. Formerly common, now rare or extinct; in ones or twos. Well-wooded country. Breeding from late July to November; C/2(4).

It was common in colonial times and still so until 1920, but by 1935 it had become scarce in the Perth, Rockingham and Bunbury districts. Its last stronghold is (or was) the tuart *Eucalyptus gomphocephala* forests east of Lake Preston.

Eopsaltria georgiana (Quoy and Gaimard)

White-breasted Robin

Only occurring in extreme north-west (acacia scrub 3 km SSE Lancelin), near Harvey (close to Darling Scarp) and in extreme south-west (near Busselton).

Pachycephala pectoralis fuliginosa Vigors and Horsfield

Golden Whistler

Range. Greater part of mainland; also Rottneest and Garden Is.

Status etc. As a resident uncommon (formerly moderately common) on Rottneest I., moderately common on Garden I., and scarce (formerly uncommon) on mainland and restricted to western zone; elsewhere a scarce visitor (March-July); usually single. Mainly thickets and scrubs of *A. rostellifera* and other acacias, *M. lanceolata*, *M. raphiophylla* and other melaleucas, and *Agonis flexuosa*; also shrubby understory of eucalypt forests. Breeding from late August to early November.

Pachycephala rufiventris (Latham)

Rufous Whistler

Range. Greater part of mainland and formerly Rottneest I. (last report in 1925).

Status etc. Uncommon to common (most numerous in north); usually single, occasionally in twos. The more open forests, woodlands and scrubs. Breeding from late August to mid-December (exceptionally to late February); C/2(7), 3(9).

Colluricincla harmonica rufiventris Gould

Grey Shrike-thrush

Range. Greater part of mainland.

Status etc. Scarce to moderately common (most numerous in north and west);

usually single. Wooded country, especially tuart *Eucalyptus gomphocephala* forest. Breeding from September to December; C/2(1), 3(2).

Falcunculus frontatus leucogaster Gould

Crested Shrike-tit

Status uncertain; perhaps formerly a rare inhabitant of tuart *Eucalyptus gomphocephala* forest of western zone. Only recorded from Wanneroo (specimen collected in 1907) and Bunbury (specimen collected in 1902 and observations by Whitlock [1939, *Emu* 39: 54] over several years of a pair or more in the largest remaining tract of tuart).

Oreoica gutturalis (Vigors and Horsfield)

Crested Bellbird

Range. Northern quarter of mainland, south to Mullaloo, Melaleuca Park and Upper Swan (south to Perth in colonial times).

Status etc. Moderately common; usually single. Mainly open banksia scrubs; also heathland with emergent *Eucalyptus todtiana*.

Psophodes nigrogularis nigrogularis Gould

Western Whipbird

Formerly inhabited coastal scrubs. John Gilbert found it in dense thickets near Perth in October 1842 and in waterside thickets on the Vasse. The only other record is a C/2 collected by J. Harris near Bunbury in 1898.

Monarchidae

Rhipidura fuliginosa preissi Cabanis

Grey Fantail

Range. Throughout the mainland and on Garden I. Casual on Rottnest I.

Status etc. Moderately common resident and moderately common winter visitor and passage migrant (April-October, mostly April-May and July-August); in ones or twos, rarely small flocks (up to 10). Well-wooded country, especially waterside melaleuca thickets. Breeding from August to December (? early January); C/2(14), 3(12).

Rhipidura leucophrys leucophrys (Latham)

Willie Wagtail

Range. Throughout the mainland and on Garden I. Casual on Rottnest I.

Status etc. Uncommon to common resident, numbers slightly augmented by winter visitors and passage migrants (autumn and spring); usually in ones or twos, occasionally small flocks (up to 12) on migration. Lightly wooded country (including farmlands), especially in vicinity of water; also coastal scrubs and burnt heathlands; attracted to kelp flies infesting cast-up seaweed. Breeding from August to mid-December; C/2(5), 3(26), 4(1). This bird was common in the suburbs of Perth at the turn of the century, when horses and dairy cows were still kept close to the city.

Myiagra inquieta inquieta (Latham)

Restless Flycatcher

Range. At present far north, south to Loch McNess and Lake Chandala. Casual further south.

Status etc. Uncommon to moderately common resident in far north, scarce visitor (April-September) further south; in ones or twos. Mainly paperbarks *Melaleuca* spp. and flooded gums *Eucalyptus rudis* along streams and around lakes and swamps. One dated breeding report: November; C/3. This species was formerly widespread on the coastal plain. It used to breed at Midland and Lake Claremont (as late as 1922), and judging from summer records it was resident on the Harvey River (until at least 1901) and the Vasse River (until at least 1919).

Orthonychidae

Pomatostomus superciliosus (Vigors and Horsfield)

White-browed Babbler

Said to occur at Busselton in extreme south, but no report since Whittell's (1952, *West. Aust. Nat.* 3: 78), which may have derived from the much earlier record of Carter (1924, *Emu* 23: 235), itself possibly based on observations in the 1880s.

Acanthizidae

Gerygone fusca fusca (Gould)

Western Flyeater

Range. Greater part of mainland, also Rottneet I. (established in eastern half since early 1950s) and Garden I. Casual on Carnac I.

Status etc. Resident, winter visitor and passage migrant (late February to early October). Common; usually in ones or twos. Well-wooded country, especially eucalypt and melaleuca forests and woodlands. Breeding from early September to mid-December; C/2(8), 3(23), 4(1); parasitised by Shining Bronze Cuckoo (5 records). At the turn of the century it could be 'seen and heard almost any day in the pollarded eucalypts in Stirling Street in the City of Perth' (B.H. Woodward 1902, *Western Australian Year-book for 1900-01*, 1: 229).

Smicrornis brevirostris (Gould)

Weebill

Range. Western zone, from the lower Moore River south nearly to Busselton. Eastern zone, from Regans Ford south to Wungong Brook.

Status etc. Common in north of western zone but scarce south of Mandurah, mainly in tuart *Eucalyptus gomphocephala* (including eastern outlier in Kings Park); common in north of eastern zone but scarce south of Upper Swan, mainly in flooded gum *Eucalyptus rudis*, wandoo *E. wandoo* and marri *E. calophylla*; in ones, twos or small flocks (up to 15 in April-July). Breeding from late August to mid-November; C/2(6), 3(1).

Acanthiza pusilla apicalis Gould Brown Thornbill

Range. Throughout the mainland.

Status etc. Common; usually in pairs or small parties. Most kinds of thicket and scrub, but favouring waterside melaleucas. Breeding from August to early November; C/2(11), 3(9); parasitised by Fan-tailed Cuckoo (1 record), Horsfield's Bronze Cuckoo (1) and Shining Bronze Cuckoo (11).

Acanthiza inornata Gould Western Thornbill

Range. Greater part of mainland.

Status etc. Moderately common; usually in pairs or small parties (up to 8). Well-wooded country. Breeding from late August to December; C/2(5), 3(6); parasitised by Horsfield's Bronze Cuckoo (1 record) and Shining Bronze Cuckoo (4).

Acanthiza chrysorrhoa (Quoy and Gaimard) Yellow-rumped Thornbill

Range. Throughout the mainland.

Status etc. Moderately common to very common (most numerous in partly cleared farmlands); usually in pairs or family parties in breeding season and flocks (up to 28) in off-season. Lightly or moderately wooded country or open country in vicinity of low trees or tall shrubs suitable for nesting and shelter. Breeding from July to December (? January); C/2(7), 3(86), 4(32); parasitised by Horsfield's Bronze Cuckoo (1 record) and Shining Bronze Cuckoo (36). For breeding behaviour see Ford (1963, *Emu* 63: 185-200).

Sericornis frontalis maculatus Gould White-browed Scrubwren

Range. Western zone, inland to Loch McNess, Wanneroo, Lake Cooloongup and Yunderup; also Rottnest I. Patchily in central and eastern zones (upper Gingin Brook, Murray River at Coolup, swamp at West Coolup, 17 km W Waroona, Harvey River).

Status etc. Moderately common; in pairs or family parties. Mainly thickets and scrubs in coastal dunes and on near-coastal sandplains; also waterside melaleuca thickets. Breeding from late July to mid-November; C/3(1); parasitised by Fan-tailed Cuckoo (1 record), Horsfield's Bronze Cuckoo (1) and Golden Bronze Cuckoo (1).

Calamanthus fuliginosus campestris (Gould) Striated Fieldwren

Only known from extreme north-west (sandplains near Lancelin).

Dasyornithidae

[*Dasyornis brachypterus longirostris* Gould Brown Bristlebird

Perhaps formerly inhabiting coastal plain. Whittell (1951, *Emu* 51: 26) believes that John Gilbert collected the types near Perth in 1839.]

Maluridae

Malurus splendens splendens (Quoy and Gaimard) Splendid Fairy-wren

Range. Much of region.

Status etc. Moderately common; usually in family parties. Dense vegetation, especially coastal scrubs and waterside thickets. Breeding from August to mid-December; C/2(7), 3(25), 4(2); parasitised by Shining Bronze Cuckoo (2 records).

Malurus lamberti assimilis North Variegated Fairy-wren

Range. Western zone, from Lancelin south to Swanbourne. Casual on banks of Swan River (Pelican Point, Maylands, Belmont).

Status etc. Uncommon; usually in family parties. Coastal scrubs, especially of *Acacia rostellifera*; also waterside shrubbery. Breeding in October; C/2(1), 3(1).

Malurus pulcherrimus Gould Blue-breasted Fairy-wren

Range. Far north-west: only recorded from mouth of Moore River.

Status etc. Scarce; in family parties. Coastal scrubs, especially of *Acacia rostellifera*.

Malurus elegans Gould Red-winged Fairy-wren

Range. Now regionally confined to banks of Gingin Brook (downstream nearly to its confluence with the Moore River) and to banks of the Harvey River east of Harvey. Formerly around Herdsman Lake (last reported in 1901), Forrestdale Lake (1907) and coastal swamps in Busselton district (1905).

Status etc. Moderately common; in pairs or family parties. Waterside thickets. One breeding report (Quindalup, 1889): c. November; parasitised by Horsfield's Bronze Cuckoo (1 record).

Malurus leucopterus leuconotus Gould White-winged Fairy-wren

Range. Mainly western zone, from Lancelin south to Swanbourne and inland to Barramber, Yanchep and Lake Goollelal; also central zone on the Beermullah Plain. Casual further east (Gingin) and further south (Mussel Pool, Maylands, Heirisson I., Pelican Point, Naval Base).

Status etc. Moderately common to common; usually in family parties. Low open shrublands, especially in coastal dunes and on near-coastal sandplains; also sapphire flats. Breeding from October to December; C/3(2), 4(1). It has spread

southwards since colonial times; it was first recorded in 1931 (near Burns Beach).

Stipiturus malachurus westernensis Campbell

Southern Emu-wren

Range. Far north-west from Lancelin south to the mouth of the Moore River. Southern two-thirds of coastal plain, north to Osborne Park and Maida Vale.

Status etc. Locally common, e.g. immediately south of Lancelin, but generally uncommon and patchily distributed; in ones, twos or small parties. Low dense shrubland in coastal dunes, near-coastal sandplains and seasonally-wet clay flats; also sedges in swamps and around lakes. Breeding in September; C/3(2).

Sylviidae

Acrocephalus stentoreus australis (Gould)

Clamorous Reed-warbler

Range. Throughout the region.

Status etc. Common; usually single. Bulrushes, rushes and sedges in swamps, around lakes and along streams. Breeding from October to mid-January; C/2(1), 3(14), 4(7); parasitised by Pallid Cuckoo (1 record) and Fan-tailed Cuckoo (1).

Megalurus gramineus (Gould)

Little Grassbird

Range. Throughout the region.

Status etc. Common; usually in ones or twos. Rushes, sedges and bulrushes in swamps and around lakes, also samphire and pampas grass. Breeding from July to early December; C/2(2), 3(13), 4(16).

Cincloramphus mathewsi Iredale

Rufous Songlark

Range. Greater part of region, south to the Bunbury district.

Status etc. Scarce visitor (September to early March); usually single. Mainly lightly wooded grasslands (especially partly cleared farmlands); also heathlands.

Cincloramphus cruralis (Vigors and Horsfield)

Brown Songlark

Range. Greater part of region.

Status etc. Visitor (June-March, mostly October-January). Scarce to moderately common (most numerous in Gingin district); usually single. Open or sparsely wooded grasslands, especially farmlands. Said to have nested at Busselton.

Daphoenosittidae

Daphoenositta chrysoptera pileata (Gould) Australian Sittella

Range. Western zone, from Yanchep National Park south to Wonnerup. In central and eastern zones south only to Canning Vale and Pinjarra.

Status etc. Uncommon to moderately common (most numerous in north); in pairs or small roving flocks (up to 8). Mainly eucalypt forests and woodlands (especially of tuart *E. gomphocephala*); also banksia scrubs. Breeding from August to early December; C/2(4); 3(3).

Climacteridae

Climacteris rufa Gould Rufous Treecreeper

Formerly western zone from Wanneroo south to Busselton and inland to Applecross, but only one record since 1920, namely observation by Kolichis (1978, *West. Aust. Nat.* 14: 52) of two birds entering hollows in tuarts at Balcatta in 1974. Also an early record from eastern zone: Hill (1904, *Emu* 3: 227) saw it on one occasion at Guildford.

Dicaeidae

Dicaeum hirundinaceum hirundinaceum (Shaw) Mistletoebird

Range. Greater part of region south to Bunbury.

Status etc. Nomadic. Scarce to moderately common (much more numerous in north than south); usually single, occasionally in pairs. Mainly eucalypt woodlands (especially of tuart *E. gomphocephala* and flooded gum *E. rudis*), also acacia scrubs and suburban gardens; attracted to fruiting mistletoes.

Pardalotidae

Pardalotus punctatus (Shaw) Spotted Pardalote

Range. Greater part of region. Casual on Rottnest I.

Status etc. Visitor (March-November, mostly April-June). Common in some years (1940, 1958), but generally uncommon; usually in ones or twos, occasionally small parties (up to 6). Eucalypt forests and woodlands, especially of tuart *E. gomphocephala* and flooded gum *E. rudis*. Rarely remaining to breed (reported as far north as Perth).

Pardalotus striatus westraliensis Mathews Striated Pardalote

Range. Greater part of region. Casual on Rottnest I.

Status etc. Moderately common to common (most numerous in August-December); in ones, twos or small flocks (up to 15). Eucalypt woodlands and forests. Breeding from August to early December; C/3(2), 4(1). Movements unclear: perhaps a small migration northwards in summer-autumn and return in spring; an immature bird flew exhausted on to a boat 27 km off Lancelin in late February.

Zosteropidae

Zosterops lateralis gouldi Bonaparte

Grey-breasted White-eye

Range. Greater part of region, including Rottnest, Carnac and Garden Is.

Status etc. Nomadic, e.g. a bird banded at Nollamara in April 1972 was found at Witchcliffe in May 1973, 254 km S. Uncommon to very common (most numerous near coast and on islands, least on sandplains of central zone); usually in pairs when breeding, and flocks (up to 100) in off-season. Most kinds of thicket and scrub; also vineyards, orchards and town and suburban gardens. Breeding from late July to January; C/2(49), 3(26); parasitised by Fan-tailed Cuckoo (1 record).

Meliphagidae

Lichmera indistincta indistincta (Vigors and Horsfield)

Brown Honeyeater

Range. Greater part of region. Casual on Rottnest and Garden Is.

Status etc. Uncommon to very common (most numerous in northern half, in central zone, from January to August, and in certain suburbs of Perth, e.g. Kelm-scott); in ones, twos or small flocks (up to 20). Shrublands, also town, suburban and farm gardens; attracted to flowering *Banksia menziesii*, *B. ilicifolia*, *B. attenuata*, *Dryandra sessilis*, *Eucalyptus calophylla*, *E. gomphocephala* and many cultivated plants, especially *Erythrina indica*. Breeding from August to December; C/2(18). For at least 90 years this and the Singing Honeyeater have been the commonest representatives of their family around Perth.

Meliphaga virescens (Vieillot)

Singing Honeyeater

Range. Greater part of region, including Lancelin, Rottnest, Carnac, Garden and Penguin Is. Casual on Seal I.

Status etc. Uncommon to very common (most numerous in coastal and urban areas, least in eastern zone); usually single when feeding, in small groups when roosting. Open scrubs (especially those of coastal dunes), also town and suburban gardens; attracted to flowering *Templetonia retusa*, *Banksia menziesii*, *Agonis flexuosa*, *Eucalyptus calophylla*, *Calothamnus*, *Melaleuca*, *Grevillea* and numerous cultivated plants, especially *Erythrina indica*, lemon-scented gum and hibiscus. Breeding from August to early January, also May (once); C/2(8), 3(7); parasitised by Pallid Cuckoo (4 records).

Meliphaga ornata (Gould)

Yellow-plumed Honeyeater

Range. Western zone south nearly to Busselton (Wonnerup) and inland to Yanchep, Wanneroo, Kings Park, Melville (formerly to South Perth), Mandogalup and Lake Walyungup.

Status etc. At present locally moderately common (Lake Coo loongup) but generally scarce or extinct; usually in small parties. Forests and woodlands of tuart *Eucalyptus gomphocephala*. Breeding from early September to late November; C/1(1), 2(5). Formerly more plentiful and in 1889 even inhabited eucalypts in Fremantle (A.J. Campbell). Still common in 1920 (W.B. Alexander), but declining in Bunbury district in 1930s (F.L. Whitlock), and not recorded north of the Swan since 1937.

Meliphaga penicillata Gould

White-plumed Honeyeater

Vagrant. A pair at Joondana (5 km NNW Perth) in July 1969 (Wilbrey 1969, *West. Aust. Nat.* 11: 99).

Melithreptus brevirostris leucogenys Milligan

Brown-headed Honeyeater

Rare visitor. A specimen in WA Museum from South Perth (February 1902) and a pair from Harvey River (February 1904) and observations by W.B. Alexander of one in a flowering *Templetonia retusa* near Swanbourne (July 1919) and by J.R. Ford of six in a patch of wandoo 15 km S Regans Ford (October 1979).

Melithreptus (lunatus) chloropsis Gould

White-naped Honeyeater

Range. Western zone from Yanchep south to Busselton. Eastern and central zones from Middle Swan south to Harvey and west to Nedlands and Thomsons Lake.

Status etc. Formerly a common resident in western zone, mainly in tuart *Eucalyptus gomphocephala* forest, but now scarce or extinct. In eastern and central zones (and possibly western zone) an uncommon non-breeding visitor (late March to early October), usually in small parties (up to 8); reported in flooded gums and jarrah-banksia scrubs. Breeding from September to November (but no record since 1902); parasitised by Pallid Cuckoo (1 record).

It has greatly declined in western zone: it was 'quite abundant and bred freely' at Crawley in the early 1890s (O.H. Lipfert) and was still 'common in tuart country near the coast' in 1920 (W.B. Alexander), but was evidently gone from the Bunbury district by the 1930s (F.L. Whitlock did not mention it) and had 'largely disappeared' by 1948 (D.L. Serventy). In past possibly resident in eastern zone: the Western Australian Museum received a nest and eggs from Pinjarra in September 1898 and skins from Cannington in November 1899 and Kelmscott in November 1900.

Phylidonyris novaehollandiae (Latham)

New Holland Honeyeater

Range. Greater part of mainland.

Status etc. Uncommon to common (most numerous in north); in ones, twos or small parties (up to 6). Mainly waterside thickets, also visiting flowering shrubs and trees in adjacent habitats especially banksia scrubs) and occasionally town and suburban gardens; attracted to flowering *Adenanthos*, *Melaleuca*, *Regelia*, *Banksia menziesii*, *B. littoralis*, *B. ilicifolia* and *Dryandra sessilis*. Breeding from July to November, also May and June in 1955 following heavy late summer and autumn rains; C/2(26), 3(5); parasitised by Pallid Cuckoo (1 record).

Phylidonyris nigra mystacalis (Gould)

White-cheeked Honeyeater

Range. Disjunct in northern third of mainland; western zone from Lancelin south to Swanbourne (formerly to Fremantle) and inland to Yanchep and Lake Jandabup; north-east in Moore River National Park, near Lake Beermullah and at Lake Bambun; and southern and south-eastern outskirts of Perth from Wilson (formerly South Perth) and Wattle Grove south to Jandakot, Forrestdale and Kelmscott. [A specimen labelled 'Busselton' possibly came from nearby Cape Naturaliste.]

Status etc. Moderately common; in ones, twos or small parties (up to 10). Shrublands; attracted to flowering *Banksia prionotes*, *B. menziesii*, *Dryandra sessilis*, *Adenanthos* and *Kunzea ericifolia*. Breeding from mid-July to early November; C/2(8), 3(1).

Phylidonyris melanops (Latham)

Tawny-crowned Honeyeater

Range. Disjunct in northern third of mainland: western zone from Lancelin south to Mullaloo (formerly Fremantle); far north-east (Beermullah Plain); southern and south-eastern outskirts of Perth from Maddington (formerly South Perth) south to Jandakot, Forrestdale and Kelmscott. Also extreme south: Busselton district, east to Ruabon.

Status etc. Moderately common in far north-west (south to Yanchep National Park), uncommon and patchily distributed elsewhere; in ones, twos or small parties (up to 4). Heathlands with or without emergent low trees or tall shrubs; attracted to flowering *Dryandra sessilis* *Banksia menziesii*. Breeding in August and September; C/2(3).

Acanthorhynchus superciliosus Gould

Western Spinebill

Range. Greater part of mainland.

Status etc. Uncommon to common (most numerous in north); usually single or in pairs. Scrubs (especially of *Banksia* spp.), woodlands and shrubby undergrowth of eucalypt forests, also visiting (mainly in autumn) town and suburban gardens;

attracted to flowering *B. menziesii* and other banksias, *Xanthorrhoea preissii*, *Adenanthos meisneri* and cultivated plants, especially *Bougainvillea* and *Lantana*. Breeding from late July to early December; C/1(6), 2(8); parasitised by Pallid Cuckoo (3 records).

Manorina flavigula (Gould)

Yellow-throated Miner

Range. Northern half of mainland, from Cowalla and Regans Ford south to Duncraig, Turana and Middle Swan (formerly to Herdsman Lake, Bayswater and Guildford), and from Brentwood and formerly Victoria Park south to Lake Cooloongup, Wellard and Mundijong. Also the Pinjarra district from North Dandalup south to Coolup, and much further south at 4 km S Waterloo.

Status etc. Moderately common north of Perth, but now uncommon and patchily distributed further south; usually in pairs or small flocks (up to 20). Mainly banksia scrubs and woodlands of central zone, also swampy heaths with emergent melaleucas; attracted to flowering *B. menziesii* and other banksias. Breeding from August to November; C/2(4), 3(11). See Plumb (1948, *Emu* 47: 191).

It has declined since European settlement, revealing an inability here to cope with partial clearing of its habitat, in marked contrast to its explosive increase on the recently cleared Esperance Plain.

Anthochaera chrysoptera lunulata Gould

Little Wattlebird

Range. Greater part of mainland.

Status etc. Uncommon to moderately common (steadily decreasing in abundance southwards); usually in pairs or small flocks (up to 15), occasionally larger flocks (up to 50). Thickets, scrubs and woodlands with flowering shrubs and low trees, especially *Dryandra sessilis* and *Banksia* spp.; also attracted to flowering exotics, e.g. coral trees and lemon-scented gums. Breeding from June to November; C/1(52); parasitised by Pallid Cuckoo (4 records).

Anthochaera carunculata (White)

Red Wattlebird

Range. Throughout the mainland. Casual on Rottnest I.

Status etc. Nomadic. Common; usually in ones, twos or small parties, commonly in roving flocks (up to 100) from late summer to early winter. Most kinds of scrub and the more open eucalypt woodlands and forests, also town and suburban gardens; attracted to flowering *Banksia menziesii*, *B. attenuata*, *B. ilicifolia*, *B. grandis*, *B. prionotes*, *Anigozanthos manglesii* and several cultivated plants, especially coral trees and bottlebrushes. Breeding from late July to mid-December; C/1(4), 2(36), 3(2); parasitised by Pallid Cuckoo (12 records). An adult banded near Swanbourne in August 1976 was found dead at Mandurah in January 1978 (63 km S), and a bird banded at Yanchep in September 1982 was found dead at Dalkeith in December 1982 (53 km S).

Epthianura albifrons (Jardine and Selby)

White-fronted Chat

Range. Greater part of region, including Rottnest I. Casual on Garden I.

Status etc. Common resident on Rottnest I.; usually in pairs or small parties. On most of mainland an uncommon to moderately common summer-autumn visitor (mostly January-April); usually in flocks (up to 100, mainly of immatures). Open country, especially waterside flats and farmlands; also grasslands and heathlands. Breeding on Rottnest I. and far north of mainland (reports from 8 km SE Lancelin and Boonanerring Nature Reserve) and far south (Bunbury and Busselton): June to December; C/2-3. For biology see Williams (1979, *Aust. J. Zool.* 27: 213-229).

Epthianura tricolor Gould

Crimson Chat

Range. Northern quarter of mainland, south to Cottesloe and Millendon.

Status etc. Rare and infrequent spring visitor; in ones, twos or small flocks (up to 20), sometimes accompanying flocks of White-fronted Chats. Sparsely wooded country, especially near-coastal heathlands, also farmlands of eastern zone. Two breeding reports (one each in 1981 and 1983): October; C/2(1), 3(1).

Fringillidae

Carduelis carduelis (Linnaeus)

Goldfinch

Range. Vicinity of Perth, from Wanneroo and Herne Hill south to Bibra Lake and Gosnells.

Status etc. Exotic species, becoming feral c. 1933 but beginning to decline in mid-1960s and extinct by early 1970s. At its peak in 1950s it was uncommon to moderately common; in ones, twos or small flocks (up to 12). Lightly wooded country, including farmlands; attracted to seeding sunflowers and other composites. Breeding from late October to December; C/5(2).

Ploceidae

Emblema oculatum (Quoy and Gaimard)

Red-eared Firetail

Formerly occurring in waterside thickets north at least to vicinity of Perth, where Gilbert collected it in 1839 (Serventy 1948, *Emu* 47: 284). The only other record are observations by R. Trickett at Pinjarra c. 1913 (Serventy, *supra cit.*).

Poephila guttata castanotis (Gould)

Zebra Finch

Casual in northern part of eastern zone: they visited Gingin c. 1914, when numbers nested in orange groves (I. Edgar); a pair arrived in Middle Swan in June 1980 and nested in a wattle in early September (J.K. Minchin). Recently esta-

blished at Herdsman Lake: V.K. Combs saw flocks of c. 50 and 12 in October 1982 and April 1983, and J. Maher saw a flock of c. 75 in August 1986.

Lonchura castaneothorax castaneothorax (Gould) Chestnut-breasted Mannikin

Aviary escapees or their descendents were established in the Osborne Park/Herdsman Lake area by 1973 (Kolichis 1978, *West. Aust. Nat.* 14: 51); by 1979 flocks of up to 100 had been seen, feeding on the seeds of winter grass and wild oats growing in market gardens close to swamps and the lake. Established at Maylands by 1982, when T.F. Houston saw a flock of 8 in Bardon Park; by 1986 flocks of up to 20 were feeding on wild oats in wastelands on the Peninsula (R.H. Stranger). Established at Bibra Lake by 1983; a flock of more than 120 observed here in 1984 (Coate 1984, *West. Aust. Bd Notes* No. 31: 11). Flocks seen at Benger Swamp in 1983 and 1984.

Sturnidae

Sturnus vulgaris vulgaris Linnaeus Common Starling

Status uncertain. A specimen (WAM A4736) was collected near Gingin in August 1936, and another (A9209) on Garden I. in June 1963. It is unknown whether these birds reached the region unaided.

Grallinidae

Grallina cyanoleuca (Latham) Magpie-lark

Range. Greater part of mainland. Casual on Rottneest I. (December-April).

Status etc. Uncommon to common non-breeding visitor or passage migrant (mainly January to May); in ones, twos or flocks (up to 100 and largely of immatures). Scarce to moderately common resident, mostly in eastern zone; in ones, twos or family parties. Sparsely vegetated flats around lakes and swamps and farmlands (especially irrigated pastures). Breeding mainly in eastern zone, but also in central and western zones west to Lake Beermullah, Loch McNess, Herdsman Lake, Lake Claremont, Bibra Lake, Wellard, Bunbury and Busselton: August to mid-November, also April and May in 1955 following heavy rain in February and autumn; C/2(2), 3(9), 4(11), 5(1). In colonial times, judging from John Gilbert's observations, it was only a non-breeding visitor to the 'banks and muddy flats of the lakes around Perth'. By the turn of the century it was still an uncommon visitor to the region. The first recorded breeding was at Gingin in 1915. By the early 1920s it was breeding at Guildford and Cannington, and by the mid-1930s at Bunbury and Busselton. As a non-breeding visitor it began to increase in numbers in the 1920s. For behaviour see Robinson (1947, *Emu* 46: 265-281, 382-391; *Emu* 47: 11-27, 147-153).

Artamidae

Artamus personatus (Gould)

Masked Woodswallow

Very infrequent visitor (October-December) to northern quarter of mainland, south to Bibra Lake and the Helena River; usually in flocks (up to 200). Recorded in 1890s, 1948, 1972, 1980 and 1981. [Much more frequent in the adjacent Darling Range.]

Artamus cinereus melanops Gould

Black-faced Woodswallow

Range. Greater part of mainland, south nearly to Busselton (Ruabon).

Status etc. Uncommon to common (most numerous in north and in April-October); usually in ones or twos, commonly in small flocks (up to 15) in autumn-winter. Sparsely wooded country: low shrublands of sandplains (especially when burnt) and of swampy clay flats, also near-coastal hills and in farmlands; attracted to seeding blackboys *Xanthorrhoea preissii* and flowering *Banksia menziesii*. Breeding from September to November; C/2(1), 3(5), 4(5).

Artamus cyanopterus (Latham)

Dusky Woodswallow

Range. Greater part of mainland. Casual on Rottneest I.

Status uncertain. Perhaps locally resident, especially in far north and far south, but over most of region only an uncommon non-breeding visitor (April to early September), in ones, twos or flocks (up to 200). Well-wooded country.

Cracticidae

Cracticus torquatus torquatus (Latham)

Grey Butcherbird

Range. Greater part of region, including Garden I.

Status etc. Moderately common; usually single, occasionally in twos. Most scrubs, thickets and woodlands, including the leafier suburbs of Perth, e.g. Floreat, Nedlands and Kelmscott, but not the denser eucalypt forests. Breeding from mid-August to early November; C/2(6), 3(29), 4(5), 7(1). For details of C/7 see Robinson (1955, *West. Aust. Nat.* 5: 47), and suspected cannibalism Robinson (1955, *West. Aust. Nat.* 5: 141-2).

Cracticus nigrogularis (Gould)

Pied Butcherbird

Vagrant. Recorded near Gingin (two birds c. 1940 and two in May 1973), west of Wanneroo (two in November 1955), near Woodman Point (one in January 1973) and at Busselton (one in September 1942).

Cracticus tibicen dorsalis (Campbell)

Australian Magpie

Range. Greater part of region, including Garden I.

Status etc. Common; in ones, twos or small flocks (up to 20). Farmlands and other lightly wooded country with sparse or low ground cover, including lawns in towns and cities. Breeding from late July to early November; C/3(9), 4(3). For life history see Wilson (1946, *Emu* 45: 233-244) and Robinson (1956, *Emu* 56: 233-336).

Strepera versicolor plumbea Gould

Grey Currawong

Status etc. Formerly occurring in most of mainland, now scarce and patchily distributed; in ones, twos or small parties (up to 5). Well-wooded country, especially tuart and other eucalypt forests and woodlands.

Corvidae

Corvus bennetti North

Little Crow

Range. Mainland, south to at least Harvey.

Status etc. Visitor (mid-December to late May) since the 1920s. Uncommon to very common (most numerous in north and eastern zone); usually in flocks (up to 150). Lightly wooded country, especially farmlands; attracted to slaughter-yards, piggeries and thermals. Birds banded at Midland Abattoir on 15 January 1973, 22 January 1973, and 1 March 1974 were recovered respectively on 6 January 1981 at Dandaragan (145 km NNW), on 8 April 1980 at Mogumber (95 km N) and 9 July 1974 at Tardun (350 km N).

Corvus coronoides perplexus Mathews

Australian Raven

Range. Throughout mainland and on Rottneest, Carnac and Garden Is. Casual on Penguin I.

Status etc. At present common; usually in ones or twos, commonly in small parties, occasionally in flocks (mostly after breeding season). Lightly wooded country, especially farmlands and vicinity of main roads; attracted to road-killed animals, nesting seabirds, garbage dumps and piggeries. Since late 1960s regularly visiting Perth and suburbs in search of eggs of feral pigeons nesting in old buildings and for spilt food at parks and take-aways; for its ability to open garbage bins see Start (*Naturalist News*, August 1986). Breeding from mid-July to late August (? early September); C/2(1), 3(3), 4(3), 5(2).

[*Corvus splendens* Vieillot

House Crow

Occasionally reaching Fremantle, Kwinana and Bunbury on ships from southern Asia. Despite wide dispersal from these ports and even breeding on one occasion,

it has failed to establish itself, thanks to the vigilance of the Agriculture Protection Board. It has been collected at Claremont, Fremantle, Bicton, Hilton Park, Byford and Burekup, and reliably reported at Coolup.]

DISCUSSION

Most of the original vegetation in the region has been replaced by farms, cities, towns, pine plantations, vineyards, orchards, farmlets and industrial areas. Many bush birds have gone from cleared and partly cleared lands but survive in remnants of bush or where the cover remains substantial but in far from pristine condition.

However, several species have sharply declined even where, as in national parks, the changes to the environment have been minimal. This especially concerns birds that favour tuart *Eucalyptus gomphocephala* woodlands and forests, e.g. the Yellow Robin, Crested Shrike-tit, Rufous Tree-creeper, Yellow-plumed Honeyeater and Grey Currawong.

Another category of declining species comprises those inhabiting melaleuca and other waterside thickets and woodlands, e.g. Black Bittern, Barking Owl, Restless Flycatcher, Red-winged Fairy-wren and Red-eared Firetail. Other bush birds that have declined since colonial times include the Painted Button-quail, Bush Stone-curlew (perhaps because of fox predation), Common and Brush Bronzings (perhaps because of human predation), Golden Whistler, Western Whipbird (perhaps because of predation by feral cats) and Yellow-throated Miner.

The local extinction of the Western Long-billed Corella and decline in the Emu and Wedge-tailed Eagle have probably resulted directly from destruction by farmers. However the Eagle, like other non-covine carrion feeders, such as the Whistling Kite and Brown Falcon, has doubtless also suffered from the modern, widespread usage of 1080 and other poisons.

Many wetlands have been drained; others are now polluted. There has been a decline in deep-water ducks, especially the Hardhead. The degradation or removal of waterside herbage by livestock, farmers and local government 'beautification' schemes (requiring the reduction of the interface between water and land to a wall) has been accompanied by a decline in the Brown Bittern, Marsh Harrier and Painted Snipe.

Among seabirds the local extinction of the Pacific Gull has been attributed to the huge increase in Silver Gull numbers, aggravated by greatly increased landings by people on seabird islands.

Whereas many species have disappeared or decreased through loss or deterioration of habitat, others have profited from the changes. Clearing and the growing of pastures and crops have greatly increased the amount of habitat available to birds that would have originally been scarce, such as the Straw-necked Ibis,

Wood Duck, Black-shouldered Kite, Elegant Parrot, Australian Bee-eater, Richard's Pipit, Brown Songlark, Australian Magpie-lark, Australian Magpie and Australian Raven. Moreover five species, originally inhabitants of the arid and semi-arid zones, have colonised the region since colonial times, viz. Banded Plover, Crested Pigeon, Regent Parrot, Galah and Zebra Finch, while others have become more or less regular visitors, e.g. Cattle Egret, Cockatiel and Little Crow. The arrival of the rabbit in the 1920s provided a niche for the Little Eagle. Against the prevailing trend, the afforestation of Rottneest with eucalypts has seen the colonisation of the island by Tree Martins and Western Flyeaters.

White-backed and Welcome Swallows have benefited from the greatly increased availability of nest sites as well as from the opening of the country. The recent southward spread of the White-winged Fairy-wren is inexplicable; however, when we compare its success with the failure of its Red-winged congener, we have yet another example of how man everywhere tips the balance in favour of open, dry-country birds over forested, wet-country birds.

Following the heavy clearing of land there has been a general rise in water table and creation of new wetlands and enlargement of old ones. The new wetlands, tending to be open and shallow, have facilitated the recent colonisation of the Swan Coastal Plain by the Great Egret, Little Egret, Sacred Ibis, Glossy Ibis, Royal Spoonbill and Yellow-billed Spoonbill. There has also been an increase in the number of visiting Pacific Herons, Mountain Ducks and Pink-eared Ducks.

Four species of tropical seabird have spread southwards since colonial times; namely the Wedge-tailed Shearwater, Red-tailed Tropic-bird, Roseate Tern and Bridled Tern. Their spread and continuing increase in numbers have been generally attributed to a strengthening of the warm south-flowing Leeuwin Current. The great increase in number of visiting Bar-tailed Godwits must be due to factors outside of Australia.

A less satisfactory form of enrichment of the avifauna is the acclimatisation, deliberate or accidental, of exotic birds; 18 such species are feral in the region or were so for a short time.

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