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TWINLOCK CRYSTALFILE



AVON RIVER

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## Birds of the Northam District, W.A.

By C. F. H. JENKINS, R.A.O.U., Perth.

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The following notes have been made during a residence of four years in the Northam district; during that time the dates of the arrivals and departures of migratory birds have been carefully kept.

Northam is an agricultural district situated about 70 miles from the coast. The landscape is undulating, and the principal timber in the vicinity is York Gum (*Eucalyptus loxophleba*), Jam (*Acacia acuminata*) and White Gum (*Eucalyptus redunca elata*), with scattered patches of Casuarina and Banksia scrub. Through the district runs a moderately large river in the Avon, which provides permanent water for swamp-loving birds.

The following list contains all the birds noted by the author during his residence in the district, or concerning which he was able to obtain authentic records. Where possible the breeding months of the birds are given:—

*Dromaius novæ-hollandiæ*. Emu.—This bird is occasionally noted in the hills to the west of Northam. As females with half-grown chicks have been seen, it presumably breeds in the neighbourhood.

*Coturnix pectoralis*. Stubble Quail.—This bird is nomadic in its habits, and never seems to have been very common, but odd parties may be seen throughout the year. Breeding months, October to December.

*Synoicus australis*. Brown Quail.—Breeds in the district, but is nomadic in its habits, and never common.

*Turnix varia*. Painted Quail.—The rarest of the three Quail found in the district. Breeding months, October to December.

*Phaps chalcoptera*. Common Bronzewing.—Rare in the open country east of Northam, but more often seen in the wooded hills westward towards Toodyay, where it breeds.

*Streptopelia senegalensis*. Senegal Dove.—This introduced bird is occasionally seen in the district, probably having made its way from Perth, where it is exceedingly common.

*Tribonyx ventralis*. Black-tailed Native Hen.—Only spasmodic visits are made by this bird.

*Porphyrio bellus*. Western Swamp Hen.—This bird is probably a resident, but I have not been able to obtain a record of it breeding in the locality.

*Fulica atra*. Coot.\*—Seen on the Avon.

*Podiceps ruficollis*. Little Grebe.—This bird breeds in the district, and appears to be stationary on permanent waters. In October, 1926, a nest was located in a small swamp by the roadside; the eight eggs were removed, but shortly after another nest was constructed close to the old site.

*Podiceps poliocephalus*. Hoary-headed Grebe.\*—Seen on the Avon.

*Pterodroma macroptera*. Great-winged Petrel.—An exhausted bird of this species was picked up on the Northam Racecourse and forwarded to the Museum. The habitat of the bird in this State is the south coast, so that its presence so far inland is rather unusual, but a strong southerly blow which was prevailing at the time was probably responsible for its appearance.

\*Recorded by Mr. H. Wilson.

*Phalacrocorax carbo*. Black Cormorant.—Nomadic in its habits, and rather rare.

*Phalacrocorax ater*. Little Black Cormorant.—Nomadic and not common; breeds in company with the Little Pied Cormorant.

*Microcarbo melanoleucus*. Little Pied Cormorant.—The common Cormorant of the district. Pairs may be seen all along the small watercourses throughout the winter. About September they congregate on the favourable reaches of the Avon, where several rookeries are located.

*Anhinga novæ-hollandiæ*. Darter.\*—Seen on the Avon.

*Zonifer tricolor*. Banded Plover.—This bird is very common, and is one of the earliest breeders. During the summer months hundreds of birds may be seen congregated in the shade of trees, and it is not uncommon to see several standing in line taking advantage of the shade offered by fencing posts.

*Charadrius melanops*. Black-fronted Dotterel.—The Dotterels are plentiful near water in the summer time, and breed freely, but during the winter their movements are very erratic. Breeding months, September to January.

*Himantopus leucocephalus*. White-headed Stilt.—A clutch of three eggs collected from a swamp at Southern Brook, about nine miles from Northam, is the only record I have of this bird in the district.

*Tringa hypoleuca*. Common Sandpiper.\*—Seen on the Avon.

*Tringa nebularia*. Greenshank.\*—Seen on the Avon.

*Burhinus magnirostris*. Southern Stone Curlew.—These birds seem to be nomadic in their habits, but their mournful cry can be heard at all seasons of the year. Breeding months, August to November.

*Eupodotis australis*. Australian Bustard.—Only stray specimens of this fine bird are now seen in the district.

*Threskiornis spinicollis*. Straw-necked Ibis.—Small parties of these nomadic birds sometimes visit the district, principally during the winter months.

*Notophoxyx novæ-hollandiæ*. White-faced Heron.—This bird is common throughout the year, and often breeds at some distance from water. Breeding months, August to November.

*Nycticorax caledonicus*. Nankeen Night Heron.—I have seen several Night Herons along the Avon River during October and November, and their behaviour made me suspect that they were breeding in the vicinity.

*Dupetor flavicollis*. Black Bittern.—I have not personally observed this bird, but received an authentic clutch of eggs collected in November, 1930, from the Avon River.

*Botaurus poiciloptilus*. Brown Bittern.—Stray birds only seen.

*Chenopus atrata*. Black Swan.—Sometimes seen on the Avon River.

*Anas superciliosa*. Grey Duck.—The common duck of the district. Some are stationary on permanent water, others are nomadic. They breed along the river banks and also in growing crops some distance from water. Breeding months, July to November.

*Querquedula gibberifrons*. Grey Teal.—Not so common as the Grey Duck, but quite plentiful at times. Breeding months, August to November.

*Biziura lobata*. Musk Duck.\*—Observed on the Avon.

*Astur fasciatus*. Australian Goshawk.—One of the commonest Hawks in the district. Breeding months, September to November.

*Accipiter cirrocephalus*. Collared Sparrow Hawk.—Rare, and not recorded as breeding.

*Uroaetus auda*. Wedge-tailed Eagle.—Commonest in the wooded hills towards Toodyay, where it breeds.

*Hieraetus morphnoides*. Little Eagle.—One specimen only has come to my notice, which was shot in 1929, and forwarded to the Museum.

\*Recorded by Mr. H. Wilson.

Dr. T. Riggert.  
Waterfowl Research.

8/2/'72.

Re: Application by Mr. Masters of Toodyay to close a portion of the Avon River to shooting.

I have to report that today I visited Mr. Masters of Glen-Avon and the Shire Clerk of Northam Shire (Mr. Justin Bowen) re above.

Mr. Masters requested that the area be declared a reserve prohibiting the discharging of firearms and not only closed to the taking of wild duck during the declared seasons as previously reported. Although Mr. Masters is conservation minded and wants the area to be a sanctuary he is also concerned about the possibility of injury resulting from indiscriminate shooting.

The area in question contains a small picnic area, a church of some historic value and an old home which is used occasionally as a St. Johns Ambulance camp.

The area requested to be closed to shooting extends from that point on the Avon River at the junction of the Sth. Eastern boundary of Y location with the Avon River, to a point downstream and 20 chains Nth. West of the Nth. West boundary of "Y" location. (See litho Northam 40-sheet 1). I advised Mr. Masters that it was usual to close the land in any wetland reserve for 20 chains from the shoreline. Should this apply in this case the only locations involved are X, Y and T.

Location "Y" has been resumed by the Railway Dept., who have retained a section as a Railway Reserve (where the new standard gauge railway runs: see litho for approx. position). The remainder has been sub-divided, but the titles have not yet been issued. More information on this matter could possibly be obtained from Mr. Peter Beeson of the Lands Resumption Office - Public Works Department.

The other adjoining properties (X and T) are owned by Mr. Masters (X) and Mr. Viveash (Vie-veash). I gathered from my conversation with Mr. Masters that Mr. Viveash is agreeable to having the area declared a reserve but he could possibly desire to shoot vermin from time to time. The Northam Shire and the Northam gun club also agree with the proposal.

The Northam Shire Clerk stated that at the last Council meeting a decision had been made to erect signs near the bridge, stating that shooting from that point was prohibited. At my request he has agreed to delay further action on this matter until a decision has been made by the

W.A.W.A. Should the Wildlife <sup>Authority.</sup> ~~Association~~ agree to the closure then the Northam Shire will erect the necessary with the appropriate wording.

I therefore request that the Shire Clerk be as soon as possible of the ~~Association's~~ <sup>Authority's</sup> decision, the application is approved a suggestion as to the on the signs would also be appreciated.

D.R. Munro.  
Technical Officer.

# BIRDS OF THE SHIRE OF NORTHAM, ABOUT 100 KM EAST OF PERTH, WA

J. R. MASTERS and A. L. MILHINCH

Received 6 June 1973; accepted 27 September 1973.

## SUMMARY

MASTERS, J. R., and A. L. MILHINCH. 1974. Birds of the Shire of Northam, about 100 km east of Perth, WA. *Emu* 74: 228-244.

A systematic account of birds observed in the Shire of Northam between 1930 and 1973 is given. Three broad districts can be recognized in the Shire: forests in the west, the Avon valley in the centre and wheatbelt in the east. Annual rainfall decreases eastwards across the Shire from 816 to 408 mm and varies cyclically. Clearing for agricultural purposes has destroyed and is still destroying much wooded habitat or forest. A marked frontier for some species runs through the Shire. Change of status of some species has clearly been caused by agricultural development and many species respond to change in rainfall.

## INTRODUCTION

The area of study (Fig. 1) is the Shire of Northam, about 1,440 km<sup>2</sup> and roughly 66 km east to west and 38 km north to south at its widest. The town of Northam is near the centre, 98 km east of Perth. The area is fairly typical of a larger district covering the Shires of Toodyay to the north and of York to the south.

Very little has been published on birds of the area before 1930 though notes by John Gilbert for 1839-42 (Whittell 1941) are of interest in relation to the present status of the birds. Jenkins (1931) published on the birds of Northam, and Sedgwick (1955-56) on those of the Woorooloo district. Serventy and Whittell (1967) drew attention to the region in a general way, when discussing factors influencing distribution of birds in south-western Australia. We have lived in the area since 1930 and observed the birds regularly and hope that this paper presents a fairly complete record, at least for the Avon valley.

European settlement started in the Avon Valley in 1832 and displaced a moderate Aboriginal population by 1860. However the agriculture then was largely open grazing and not much clearing occurred before 1890. Since then the open eucalyptus and acacia forest of most of the Shire has been progressively cleared, first along the Avon Valley, then eastwards into the dryer wheatbelt, and since 1945 westwards into the Jarrah *Eucalyptus marginata* forest of heavier rainfall areas. At present cereal growing, and sheep and beef-cattle farming, are dominant and have become more and more intensive during the past fifteen years. Less than five per cent of the area is in a virgin state; the rest is more or less cleared and grazed, but many woods and scattered trees remain, especially along roads.

## TOPOGRAPHY AND CLIMATE

The Avon valley is on the western edge of the Great Western Plateau, a little inland from the Darling Range escarpment and roughly parallel to it. The river flows north-west, bisecting the Shire, and at Northam itself receives the Mortlock Rivers from the east. Landforms and soils are discussed by Mulcahy *et al.* (1972) particularly for areas just south of the Shire. In the Shire, average elevation is about 275 m asl with a maximum of about 430 m. Laterite occurs commonly above 240 m. The river channel at Northam is at 137 m, so that the valley is much dissected, particularly on the west and in valleys from the west. Granitic hills, some capped by laterite, are much intruded by doleritic dykes and in the north-west form the most rugged country. To east and west, it is much more gently undulating and along the branches of the Mortlock River there are large very flat areas with salt marshes in Habitats are very diverse in the centre because of the complex outcrop of rocks, which gives rise to different types of soil and flora. In east and west there are much larger stretches of similar country with less variety of habitats.

The climate is southern mediterranean with a growing season in winter and spring. Rains occur regularly from May to October and provide most precipitation. They fluctuate remarkably and regularly over the years, between dry periods and floods. The annual maximum at Northam is 710 mm in 1955 and minimum 237 mm in 1969. Thunderstorms occur in most summers, and infrequently heavy rains from late February to early April, often the tail-end of tropical cyclones moving south.

Temperatures are continental in character, with high summer maxima, and mild winters with some frosts at night (Fig. 2). The maximum is 46 °C

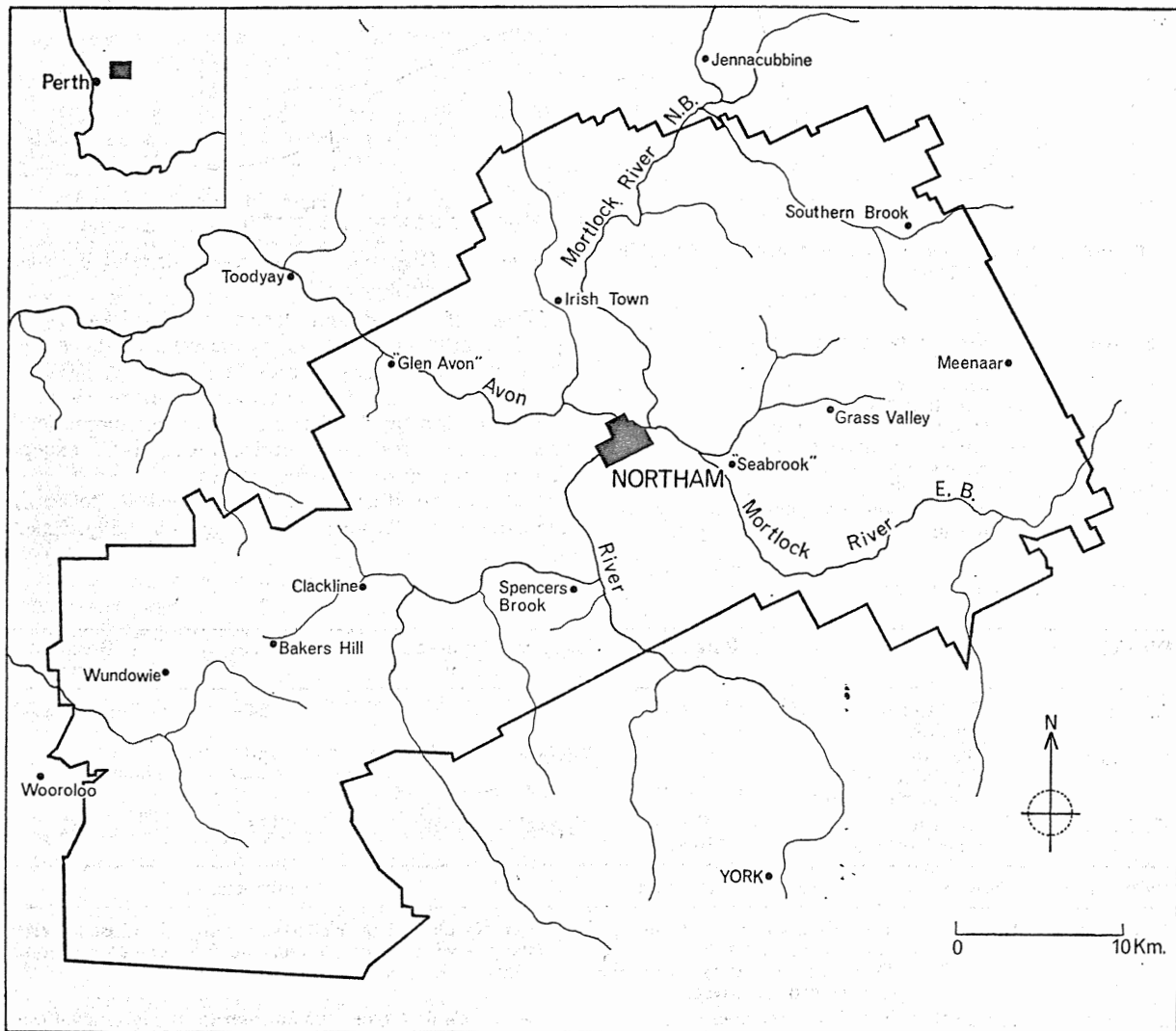


Figure 1. Map of Shire of Northam.

and minimum  $-4^{\circ}\text{C}$ , and these may be approached fairly closely each year.

The pattern of rainfall is interesting in relation to distribution of birds, most marked in the central valley and for about 20 km west. Here rainfall rapidly increases from 430 mm annual average just east of Northam to 630 mm between Bakers Hill and Clackline. To the west, the rate of increase slows; to the east the rate of decrease levels out over the wheatbelt (Fig. 3). This feature is more marked in Northam Shire than at most places on the eastern edge of the south-western zone of Jarrah forest.

Normally, rains start at the end of April in the west and in the middle of May in the east (Fig. 2);

and induce a peak of breeding during September, October and November. Unusual weather influences some birds. A few species are affected by wet and dry cycles over periods of years and may appear irregularly.

Three districts and eight habitats can be distinguished in the Shire and these are summarized in Table I.

#### DEFINITIONS AND CONVENTIONS

Some terms used below may be defined for clarity.

Common	Found easily.
Uncommon	Found with difficulty.
Fairly common	Intermediate.

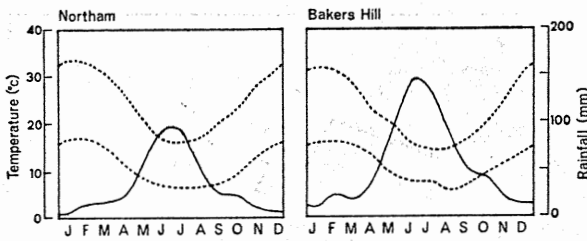


Figure 2. Annual average temperatures and rainfall in Shire of Northam.

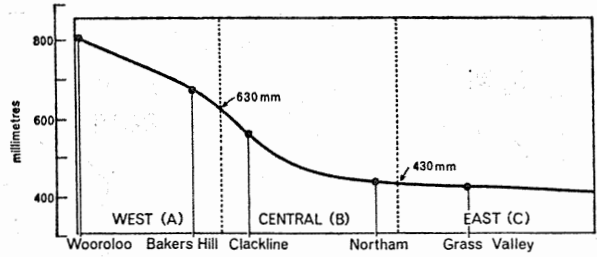


Figure 3. Diagram to show decrease of rainfall across Shire of Northam.

Scarce            Seen only a few times during five years.  
 Occasional     Seen irregularly or in unusual habitats. Less than ten in locality.  
 A few            More than about ten birds.  
 Flocks          Appear regularly each year.  
 Visit            Found throughout the year.  
 Resident        Found with reasonable certainty each year; common to scarce but appearing in Shire for at least ten years.  
 Good status

Times of arrival and departure of migrants are given exactly, when known, as the extreme dates, i.e. the earliest and latest records in the period 1932 to 1972, but we have few exact dates before 1950.

Distribution by district and habitat is summarized from Table I for each species (ABC 1-8) except for those that have occurred seldom.

Dates of breeding are given only broadly to cover the usual period from nest-building to fledging. Exact

TABLE I

Districts	Limits	Rainfall	Dominant Habitat	Species	Breeding species
A. Western	East to near Clackline	>630 mm	Jarrah forest	84	probably 40
B. Central	West of Clackline to east of Northam	↓	Diverse	158	92
C. Eastern	West to near Northam	<430 mm	Typical wheatbelt	113	52

Habitats	District	Vegetation	Status, etc.
1. Forest	B and C	York Gums <i>Eucalyptus loxophleba</i> Jam <i>Acacia acuminata</i> Diverse understorey on granite. Grassy ground cover.	Largely cleared on richer soils below level of laterite; merges with Sheoak <i>Casuarina huegeliana</i> ; has some Marri in B.
2. Forest	A into B	Jarrah <i>E. marginata</i> Marri <i>E. calophylla</i> Very varied understorey.	Much cleared recently; on laterite at high elevations; Jarrah replaced by Powderbark-Wandoo <i>E. accedens</i> in B; some open heathy areas.
3. Forest	A, B and C	Wandoo <i>E. redunca</i> Open understorey of shrubs.	Largely cleared; on laterite at high elevations and clay in valley of A and B; sometimes mixed with Salmon Gums <i>E. salmonophloia</i> in C.
4. Grasslands	A, B and C	Introduced grasses and other plants.	Dominant C, extensive B, not yet widespread in A.
5. Avon R.	B	Flood Gums <i>E. rudis</i> Paperbarks <i>Melaleuca maphiothylla</i> Swamp Sheoak <i>C. glauca</i>	River flows from May to December, otherwise dry sand and silt with deep pools 1-2 km long.
6. Salt-lakes and marshes	C	Swamp Sheoak Samphire <i>Salicornia</i>	Particularly in system of Mortlock River; developing along Avon as salinity rises, and clearing of river bed proceeds.
7. Streams, dams, swamps	A and B	Flood Gums Tall undergrowth.	All freshwater, some permanent, generally small undergrowth only if undisturbed.
8. Mallee sandplain and heath	C	—	Reduced to roadside verges; little importance.

dates are given only for out-of-season breeding. Clutch-sizes as given should be regarded only as representing the number of eggs seen in a nest on one visit.

The Avon and Mortlock Rivers are referred to simply as Avon and Mortlock throughout, for economy; and similarly, important observers are mentioned by initials only (CFJ = C. F. H. Jenkins; EHS = E. H. Sedgwick; and authors). Names of other local observers are given in full.

The order and nomenclature of non-passerine species is that of the Third RAOU Official Checklist, and of passerine species that of An Index of Australian Bird Names, CSIRO Division of Wildlife Research, 1969.

#### SYSTEMATIC LIST

##### DROMAIUS NOVAEHOLLANDIAE Emu (AB 2,3)

Scarce, formerly breeding, west of Avon. Restricted to or near forest country. All nests found placed on small flats in rough country during July and August, C/ 5-7. Newly hatched chicks in mid-September; family group feeding in wheat late December.

##### PODICEPS CRISTATUS Great Crested Grebe (B 5)

One, Northam Town weir second half September 1954. At Oak Park, Goomalling Shire, north-east of Northam, pair with two small chicks 18 October 1965.

##### PODICEPS POLIOCEPHALUS Hoary-headed Grebe (BC 5,6)

Common on open water during summer and autumn; not on small freshwater dams or ponds; absent or rare west of Avon in winter, but may be in small floods during November. No breeding in Northam Shire; nests on lakes east of Shire October to December; C/3 and 4.

##### TACHYBAPTUS NOVAEHOLLANDIAE Little Grebe (ABC 5,6,7)

Common resident on permanent or semi-permanent water, even small dams. Flocks (50+) during summer and autumn, often with Hoary-headed Grebe. Breeding: October to January; C/3 to 5, usually 4.

##### MACRONECTES GIGANTEUS Southern Giant Petrel

One exhausted on Northam racecourse (CFJ 1931).

##### PELECANUS CONSPICILLATUS Pelican (BC 5,6,7)

Uncommon, occasional, particularly to Avon, November to May. One to three birds will remain a few days, longest three weeks. Seven flying south-east on 20 February 1955 when Avon in unusual flood. Scarce along Mortlock.

##### ANHINGA MELANOGASTER Darter (B 5,7)

Uncommon but regular, Avon late November to May, solitary or two birds; circles high like Whistling Kite, particularly about sunset.

##### PHALACROCORAX MELANOLEUCOS Little Pied Cormorant (ABC 5,6,7)

Common on Avon and on any semi-permanent water. Flocks break up in late summer and numbers low in winter. This species and *sulcirostris* roost together, tend to forage separately; also *sulcirostris* in flocks throughout year. During past twenty years Little Pied has decreased. Breeding: colonies (5-50 pairs) from late July to January; C/3 and 4 usually during October and November.

##### PHALACROCORAX CARBO Black Cormorant (B 5)

Two records, May 1951 and April 1967, each single on Avon. CFJ (1931) lists as rare.

##### PHALACROCORAX SULCIROSTRIS Little Black Cormorant (BC 5,6)

Fairly common. Present throughout year, but most evident summer; few winter except in dry years; usually only Avon and Mortlock. Breeding: Avon October 1948 sixteen nests; October 1962 two nests; C/3 and 4.

##### ARDEA PACIFICA White-necked Heron (ABC 5,6,7)

Uncommon but frequently on any water, prefers fresher water; most often winter and spring, usually solitary. No breeding in Northam Shire; three nests, one being built, one C/2 and one three young, Oak Park lakes, 24 October 1965.

##### ARDEA NOVAEHOLLANDIAE White-faced Heron (ABC 1,3,4,5,6,7)

Common resident, particularly Avon and Mortlock, but anywhere except heavy forest. Numbers roost along Avon throughout year, but most during October to December. Breeding: sometimes far from water, July to November, usually September and October; C/4 usual. Pairs nest in same locality for years, sometimes in same nest as previously.

##### EGRETTA ALBA Large Egret (BC 5,6,7)

Uncommon, but frequent; few in winter on Avon but often from August on, singly or at most four birds. First noted 1936, considered rare until 1955; increase apparently stopped 1965. Reported on Avon between 1910 and 1920. No known breeding.

##### NYCTICORAX CALEDONIENSIS Nankeen Night-heron (B 5)

Uncommon but along Avon all year, singly or at most five birds recently; many more during 1930 to 1950 in breeding plumage during October to December. No proved breeding.

##### DUPETOR FLAVICOLLIS Black Bittern (B 5)

Not recorded since 1952. Formerly fairly common on Avon till about 1945, all year, singly. Chief diet: freshwater crayfish and mussels. Breeding: nests in paper-barks over water in secluded places, October to December; always C/3.

##### BOTAURUS POICILOPTILUS Brown Bittern (B 5)

Vagrant on Avon during early 1930s (CFJ) and up to 1946 (JRM). One in Northam town 1953; one during November 1955, also February to early April 1956, possibly same bird, at Glen Avon. No suitable reed beds in Shire.

##### THRESKIORNIS SPINICOLLIS Straw-necked Ibis (ABC 4,5,7)

Fairly common B late October to early December, but fewer than 1935 to 1946 when hundreds then fed on grassland; parties (—50) still appear B and C. Singly or a few, not often throughout Shire during rest of the year. Nearest known breeding (Gingin) c. 95 km distant.

##### PLATALEA REGIA Royal Spoonbill (B 5,7)

First recorded, two Glen Avon February and March 1943; singly between December and May on Avon since then most years. Two from March 1967 to May 1970 along 10 km of the river but no breeding proved. No record 1971, 1972 but three flying up river 2 January 1973. Generally scarce.

##### PLATALEA FLAVIPES Yellow-billed Spoonbill (BC 5,7)

Scarce; first recorded January 1942. One, remaining three weeks. Singly between October and April, occasion-

ally since, along Avon and near Mortlock; two Glen Avon from October to December 1969, a dry year, and April 1973. Seen along river in Northam in recent years (I. Marshall).

**CYGNUS ATRATUS** Black Swan (BC 5,6,7)

Uncommon; a few visit Avon at all times of year, rarely stay more than one or two days, arriving and departing at night. Nearest major nesting area Oak Park lakes when flooded, last from 1963 to 1966. Breeding: occasionally at Northam Weir, rarely elsewhere; September to December; C/4 to 6.

**CYGNUS OLOR** Mute Swan Introduced (C 5)

About twenty feral on Northam weir with some hand feeding; has not established itself elsewhere. Birds fly up and down Avon for up to 10 km at night or on cloudy days. Breeding: nests freely late September to December; C/5 to 8; once on swamp 15 km north-west of town, October 1939.

**TADORNA TADORNOIDES** Chestnut-breasted Shelduck (ABC 4,5,6,7)

Common B and C; increased greatly past ten years. During 1930s scarce visitor Avon and Mortlock and still so in A but could change rapidly; rare in Northam town sanctuary. Breeding: usually in large holes in trees; C/5 to 7; brood of 8 seen; ducklings August to early November. Pairs along Avon establish territories early June. Strongly defend territory against own species, other ducks and coots on Glen Avon dam.

**ANAS SUPERCILIOSA** Black Duck (ABC 1,2,3(nest only),4,5,6,7)

Common; some always present A, B and C; large increase Avon sanctuaries summer and autumn. Breeding: decreased in last 15 years; nests in hollow trees and flood debris, in grassland, crops and in forest often far from water; C/6 to 12, July to early December, usually September and October. Decrease of this and Grey Teal, and increase of Chestnut-breasted Shelduck and Wood Duck probably caused by clearing and increase of salinities.

**ANAS GIBBERIFRONS** Grey Teal (ABC 1,4,5,6,7,)

Common B and C, fewer A; in dry years increases on Avon in summer and autumn. Breeding: less than Black Duck, except recently along Avon; nesting as for Black Duck but not in heavy forest far from water; C/8 to 11, May to January, usually August to October; ducklings on Avon 3 May 1971. In September 1955 a pair of Black Duck and of Teal hatched broods from open nests in spreading forks of Flood Gum within three metres of each other.

**ANAS CASTANEA** Chestnut Teal (B 5)

Only recently recorded on Avon; five 24-27 November 1969; and three 17-26 January 1972. Local shooters say it appears more often south-east of Beverley (Upper Avon).

**ANAS RHYNCHOTIS** Blue-winged Shoveller (B 5)

One July 1939 on freshwater swamp near Avon with Black Duck for over one week; five, three male, 28-30 January 1972 Glen Avon dam.

**MALACORHYNCHUS MEMBRANACEUS** Pink-eared Duck (B 5)

Scarce, usually singly, near Avon most years since floods in 1963; not recorded before. Bred extensively in the Oak Park lakes during 1964; C/8 found there on 17 October and many young.

**AYTHYA AUSTRALIS** White-eyed Duck (B 5)

Uncommon Avon and some farm dams; first noted 1948, now seen at intervals throughout year; seldom more than four or five. Breeding: broods of 5 and 9 during October 1964; brood of 6, 18 October 1968.

**CHENONETTA JUBATA** Wood Duck (ABC 3,4,5,7)

Common B, increasing rapidly A and C. First appeared along Avon about 1950; has benefited greatly from increase of small farm dams. Breeding: in trees, sometimes in thick forest far from water; broods of 8 to 11, September to early November; bred freely Avon during 1969 drought, as did Chestnut-breasted Shelduck, when all other ducks almost ceased nesting.

**OXYURA AUSTRALIS** Blue-billed Duck (B 5)

Seven once November 1947 on deep well-sheltered pool on Avon.

**BIZIURA LOBATA** Musk Duck (B 5)

Usually singly on Avon, where may appear at any time of year. Pairs seen on Glen Avon dam, the birds apparently arriving and departing at night and remaining for up to a month. Breeding: once, single pair during September 1948 and again in October 1949, in old nests of Coot; C/3 and 4.

**ELANUS NOTATUS** Black-shouldered Kite (ABC 1,2,3,4)

Fairly common B and C, extending into A as clearing proceeds; prefers areas of long grass and stubble. First recorded during April 1935, two birds. Pairs remain in nesting locality for some years, foraging in surrounding farmlands regularly. Breeding: first record 19 December 1948 in old Raven's nest; between July and December; C/1 to 3.

**MILVUS MIGRANS** Black Kite (BC 4)

Rare visitor; first noted Glen Avon about 20 March 1943 after passage of a cyclone, three in a large group of Whistling Kites feeding on rabbits fed to pigs; remained about a week. Again Glen Avon March 1952, one specimen taken (WA Mus. A6975), also with Whistling Kites; Seabrook from late 1951 to early 1953. No recent sightings.

**LOPHOICTINIA ISURA** Square-tailed Kite (BC 1)

Scarce, between Glen Avon and Irishtown. Breeding: October 1936 C/3 in large Wandoo tree; 18 October 1971 bird on nest in Flood Gum.

**HALIASTUR SPHENURUS** Whistling Kite (ABC 1,2,3,4,5,6,7)

Fairly common, greatly reduced since 1950s after myxomatosis drastically reduced rabbits; remain through year, concentrating on carrion if available. Breeding: commonest near large areas of water; same nest may be used and added to each year; C/3 and 4, late September to January.

**ACCIPITER FASCIATUS** Australian Goshawk (ABC 1,2,3,5,7)

Fairly common where some forest remains; numbers reduced during the past thirty years, presumably because of clearing; circle over open grassland in early morning and near sunset. Breeding: October and November; C/3 and 4.

**ACCIPITER CIRRHOCEPHALUS** Collared Sparrowhawk (ABC 1,2,3,5,7)

Uncommon to scarce ever since 1930; has become scarce in B since about 1950. Breeding: formerly along Avon during November and December in large sheoaks; C/3 and 4.

**AQUILA AUDAX** Wedge-tailed Eagle (ABC)

Wide-ranging bird in small numbers most years. Numbers usually increase slightly each year in late summer and to end May. From 1932 to 1938 and from 1954 to 1957 very large increases occurred during this time; in the winters however few pairs stayed to breed. Normally small increases and occasional large irruptions in autumn, mostly of young golden-mantled birds. Breeding: mostly in rough forest country west of Avon. Three territories fairly well known in north-western part of Shire; occupied nearly every year. Display-flights occur at end May and in June; old nests repaired in August; young birds (downy stage) seen during October, fledge early December; two young apparently reared consistently.

**HIERAAETUS MORPHNOIDES** Little Eagle (ABC 1,2,3,4)

Fairly common A and B, and appears sporadically C; dark phase rare. Breeding: in Wandoo and Powderbark-Wandoo forest during October and November, one and two fledgelings seen in nests.

**CIRCUS ASSIMILIS** Spotted Harrier (BC 1,4)

Uncommon C, scarce B; appears from late summer till May along Avon valley; usually singly; appears to establish hunting area, which is traversed regularly each day for as long as two months. Breeding: nest seen (C. Richter) south of Grass Valley, October 1970.

**CIRCUS APPROXIMANS** Swamp Harrier (AB 4,5,7)

Scarce. Recorded as rare by EHS; few records along Avon; none since 1955; no suitable swamp habitat. Breeding: nest with C/2 mid-October 1934 in oat crop near Avon.

**FALCO SUBNIGER** Black Falcon

One for three weeks during April 1935 at Glen Avon; repeatedly took Western Ringnecks like a Peregrine Falcon whenever the parrots flew over open fields.

**FALCO PEREGRINUS** Peregrine Falcon

Single bird Glen Avon 15 March to end April 1956, during April 1957 and in August 1968; one eastern area 30 March 1969.

**FALCO LONGIPENNIS** Little Falcon

Uncommon, most often during autumn; very severe predator of Laughing Doves and seen to take Western Ringnecks and Pipits; rarely seen in pairs; single bird will remain for up to a month in a particular locality. Breeding: only east of Shire in the Meckering area (I. Roberts).

**FALCO CENCHROIDES** Nankeen Kestrel (ABC 1,3,4)

Common B and C, at present very seldom A; has decreased somewhat in B since about 1950, possibly because heavier pastures are more favourable for Black-shouldered Kite, whereas heavily grazed areas attract Kestrels. Breeding: almost always in hollow trees during late October to December; C/3 and 4.

**FALCO BERIGORA** Brown Falcon (ABC 1,2,3,4)

Fairly common, commonest C. Sometimes hover to catch small game, like clumsy Kestrel; very light-coloured phase rare. Breeding: numbers increase during dry periods in B; almost always in old Ravens' nests; C/3 and 4, from late September to November; may use the same nest in successive years.

**LEIPOA OCELLATA** Malleefowl (B 2,3)

One reported by Mr W. Chitty and members of Pearce family north of Clackline from February to April 1971 and in February 1972, when JRM inspected scratchings and footmarks in an acacia thicket; one re-

ported by Mrs R. Paynter five km further south in April 1972 in area where nesting reported probably about 1945. Detailed descriptions of bird and footmarks leave no doubt of identity.

**COTURNIX PECTORALIS** Stubble Quail (ABC 4)

Common in varying numbers; some always present B and C; uncommon A at present; appear in farm gardens and areas of lucerne in summer and autumn. Breeding: August to January; C/5 to 8; most often in cereal crops during October and November particularly after winter has been wet, with more undergrowth in crops and some moist areas.

**COTURNIX YPSILOPHORUS** Swamp Quail

Only from CFJ's list (1931).

**TURNIX VARIA** Painted Button-quail (AB 2,3)

Uncommon, apparently only on areas of laterite and nearby slopes particularly where Butter-cup Bush *Hibertia* sp is common; seldom outside virgin bush, and this habitat is becoming very scarce; most often found near the edges of gravelly laterite scarps during day throughout year. One Seabrook in C 10 October 1973. Breeding: four week-old chicks 4 October 1964.

**TURNIX VELOX** Little Button-quail (BC 1,4)

Irregular; usually scarce C, uncommon B; all records from October to March. From October 1939 to early 1944 became common in summer near rivers in B. During December 1939 thousands invaded area and nested in ripe crops, far outnumbering Stubble Quail, which also abundant that year. Each summer after that many fewer birds; from late 1944 onwards very few and irregular. Breeding: nests found 1939; C/3 and 4. Also C/4 Seabrook October 1973.

**RALLUS PHILIPPENSIS** Landrail

Perhaps overlooked. Two records at Glen Avon, both for breeding: October 1936, C/5; October and early November 1954, when pair reared four young in oat crop near homestead.

**PORZANA PUSILLA** Marsh Crake (B 4,7)

Only recorded late September to January in years with rainfall above average and some flooding. Fairly common, breeding October and November 1934, 1945-46 and 1955 near Avon. From 1964 to 1968 present at Glen Avon dam but breeding not proved; since then not recorded there though dam apparently unaltered; numerous at lakes of wheatbelt during high rainfall.

**GALLINULA VENTRALIS** Black-tailed Native-hen (ABC 5,6,7)

Rare A, at times fairly common on Avon and Mortlock. During years of flooding in wheatbelt areas well to the east of the Shire, numbers are greatest about Avon in B (cf. Marsh Crake), but birds often remain during following winter; common on Avon 1926-27, 1933-35, 1955-56, and 1963-65 near large pools, where some also appear during dry years as 1940-41 and 1971-73; single birds near small dams anywhere at any time in wet or dry years. Breeding: once Avon October 1964; has bred freely on Mortlock east of Shire early summer 1955 (I. Roberts) and at Oak Park lakes during October and November 1955 and 1964; C/6 and 7.

**GALLINULA TENEBROSA** Dusky Moorhen (ABC 5,7)

Fairly common on Avon, few on lower Mortlock, seen on large dams and along streams in A; will colonize and breed on semi-permanent swamps with good cover; perches high in thick stands of paperbarks on hot summer days. Breeding: October to January; normally C/5.

**PORPHYRIO PORPHYRIO** Swampphen (AB 5,7)

Formerly uncommon on Avon and nearby swamps; has disappeared since 1954; a few along streams and in reedbeds in A. Breeding: on Avon, October and early November; usually C/4.

**FULICA ATRA** Coot (ABC 5,6,7)

Common on Avon, fairly common any large area of permanent or semi-permanent water elsewhere, unless very salty. Breeding: September to January; C/5 to 8; quick to take advantage of nesting opportunities after filling of lakes and swamps.

**ARDEOTIS AUSTRALIS** Bustard

One Avon river flats May 1933; one near Seabrook for five days during May 1955; one Irishtown for five or six weeks May and June 1958.

**BURHINUS MAGNIROSTRIS** Bush Stone-curlew (ABC 1,3,4)

Scarce A, uncommon B, fairly common C; has decreased since 1930s; formerly fairly common near Avon, has decreased alarmingly since about 1960. Breeding: October to January; C/2; often in or near small groves of York Gums and Jam.

**VANELLUS TRICOLOR** Banded Plover (ABC 4,6)

Scarce A, fairly common B, common C; flocks in summer, become nomadic, and most appear to leave B; when returning with first rains may be heard calling at night during autumn. Fewer than during 1930s, perhaps because pastures have been improved, and so grass is longer on breeding areas formerly preferred. Breeding: unseasonable heavy rains will induce nesting; pairs select territories within a fortnight; earliest eggs 26 March 1955 Seabrook, 3 April 1971 Glen Avon.

**CHARADRIUS RUFICAPILLUS** Red-capped Dotterel

One Seabrook 1953; often on salt lakes east of Shire.

**CHARADRIUS MELANOPS** Black-fronted Dotterel (ABC 4,5,6,7)

Common B and C, uncommon A. At all times of year by streams, dams or swamps so long as there is water present; up to twenty feed on paddocks near Glen Avon dam during late afternoon; heard calling in flight at night many kilometres from daytime haunts. Breeding: September to early February, usually on shingle or baked-mud flats, sometimes on bare fields up to 500 m from water; C/3, rarely 4.

**PELTOHYAS AUSTRALIS** Australian Dotterel

Glen Avon 26 October 1967. Farmers report the bird as possibly nesting near Jennacubine and Southern Brook since about 1965. Breeding proved at Waael, Meckering Shire, to east in 1964 (I. Roberts).

**TRINGA NEBULARIA** Greenshank

Recorded by CFJ (1931); not noted again until two at Glen Avon dam 5 December 1970 to late March 1971; one or two there each year since, between same dates.

**TRINGA GLAREOLA** Wood Sandpiper

Occasional on Avon, last record 17 January 1971.

**TRINGA HYPOLEUCOS** Common Sandpiper (B 5)

Regular migrant in small numbers to Avon, nearby farm dams and drying swamps; from 4 October to end of March; one overwintered at small dam from 2 May to 4 August 1971; status not changed since 1930.

**CALIDRIS RUFICOLLIS** Red-necked Stint

About twenty in paddocks on margins of floodwaters of Avon 19 February 1955, very unusual conditions.

**HIMANTOPUS HIMANTOPUS** Pied Stilt (BC 5,6,7)

Fairly common in summer and autumn on Avon and Mortlock in B since 1960 after river was cleared of timber; widespread, suitable areas in C during spring. During winter birds may frequent temporary fresh-water pools for a few days; increase of salinity in Avon has caused great increase of birds since 1930. Breeding: reported Southern Brook; and common east and north-east of Shire late September to November; C/4.

**RECURVIROSTRA NOVAEHOLLANDIAE** Red-necked Avocet (B 5,7)

Scarce, not seen before March 1968; birds at Glen Avon dam for about a week; five on Avon near Northam October 1968 stayed over summer and returned in October 1970; not yet recorded in C; few appear each autumn on Glen Avon dam when water level low. Breeding: five pairs nested Avon near Northam November 1970; again in 1971 (J. W. Morgan); on Mortlock in Meckering Shire (I. Roberts).

**LARUS NOVAEHOLLANDIAE** Silver Gull

Scarce visitor; 50+ on morning after passage of cyclone 15 March 1943; five for few days at Glen Avon dam about 20 October 1965; one 15 July 1966 and one 5 August 1972; three Northam town weir first week of August 1972; 30 with about a dozen juveniles Oak Park lakes 18 October 1964; said to have nested there previous winter (R. Richards).

**CHLIDONIAS HYBRIDA** Whiskered Tern

Three records Glen Avon dam; one 10 October 1963; two birds for about a month from 20 October 1968, showed evidence of nesting on old Little Grebe's nest, carrying water weed and displaying at nest, but left soon after; one 26 September 1971; common at Oak Park lakes October and November 1964 and 1965.

**GELOCHELIDON NILOTICA** Gull-billed Tern

One bird from 15 to 18 October 1965 Glen Avon dam; fifteen at Oak Park lakes 18 October 1964. Flooding of lakes in eastern wheatbelt during wet periods has become more severe because land has been cleared, and this may be reason for recent appearance of this species, Silver Gulls and Whiskered Terns. Five large white terns passed along Avon August 1972 (J. N. Masters), possibly *nilotica*.

**HYDROPROGNE CASPIA** Caspian Tern**STERNA NEREIS** Fairy Tern**STERNA BERGII** Crested Tern

From sunrise to 11:00 of 15 March 1943 at Glen Avon, after passage of most severe cyclone ever to hit area in 50 years, hundreds of terns, with 50+ Silver Gulls, appeared flying due west. Wind, exceeding 120 kph during early hours of morning, had started from north-east and backed westerly by sunrise, moderating to about 30 kph. *H. caspia*, *S. nereis* and *S. bergii* were identified; a fourth species was probably Bridled Tern *S. anaethetus* but might have been Sooty Tern *S. fuscata*. No dead birds were found.

**COLUMBA LIVIA** Domestic Pigeon Introduced (BC)

Fairly common about Northam town area and at wheat silos; colonize farm buildings but not yet in open farmlands.

**STREPTOPELIA SENEGALENSIS** Laughing Dove Introduced (ABC 5,7)

Common about towns and many farm buildings; a few along Avon and some streams; population apparently stabilized during past twenty years in B and C. Breeding: October to December in these localities, and September to March in gardens; C/2.

**GEOPELIA CUNEATA** Diamond Dove

Recorded, all singly; April 1934, 20 April to first week June 1970, from 4 to 31 December 1972, all Glen Avon; Muresk Agricultural College near Avon autumn of 1968 (P. Garstone); one Seabrook January 1957; one Wooroloo 25 March 1951 (EHS); about farm buildings or open timbered areas.

**PHAPS CHALCOPTERA** Common Bronzewing  
(ABC 1,2,3,4)

Fairly common; generally decreased since about 1945. Breeding: during late 1930s commonly along Avon in paperbarks; now in dry forest only August to October; usually C/2.

**OCYPHAPS LOPHOTES** Crested Pigeon (BC 1,3,4)

Common C, decreasing to uncommon across B; first appeared in north-east about 1955; at Grass Valley 1958; appeared west of Avon autumn of 1964. Breeding: September to December, C/2 usual; has nested in farm gardens; proved at Seabrook September 1961 (Milhinch 1962) and Glen Avon October 1966 (JRM).

**CALYPTORHYNCHUS MAGNIFICUS** Red-tailed Black Cockatoo (AB 2,3)

Scarce, only west of Avon. Up to 1950 each autumn in Wandoo forest at Glen Avon and west of Clackline in flocks of up to fifty; suddenly disappeared; next and last sighting were five north of Clackline 20 September 1971; when usual, never fed in open farmland in contrast to habits further north, but remained in forest.

**CALYPTORHYNCHUS BAUDINI** White-tailed Black Cockatoo (ABC 1,2,3,4)

Common A and west of Avon in B to about limit of Marri trees during autumn and spring, less common summer and winter; scarce or casual in rest of Shire; apparently moves slowly north and south through A. Breeding, but nests not found.

**EOLOPHUS ROSEICAPILLUS** Galah (ABC 1,3,4)

Common C, decreasing across B to scarce in A; first noted (five) west of Avon in 1952; apparently colonized the north-eastern areas about 1946 and started nesting by 1950. Breeding: proved west of Avon in Wandooos during October 1962; since to Clackline in 1972 (M. Armstrong); C/4 and 5.

**CACATUA** sp Corella (BC 1,3,4)

Unidentified corellas have appeared in C; apparently first noted near Irishtown in 1969 and a pair nested seven km north of town in October 1971 (R. MacKenzie), and September and October 1972. Small flocks (up to 15) (Mrs F. Robinson) often in C; sightings along Avon in B during 1971 and 1972. *C. tenuirostris* was in Avon Valley on first settlement but had disappeared by about 1900.

**CACATUA LEADBEATERI** Pink Cockatoo

One in York Gum forest Glen Avon 15 April to end of May 1958; first thought to have escaped but was distinctly wary; in May 1959 a pair came to the same patch of trees, remained over winter and had selected nesting tree by 20 August, were then harassed by some boys and disappeared by 24 August; this pair would not tolerate close approach.

**GLOSSOPSITTA PORPHYROCEPHALA** Purple-crowned Lorikeet (ABC 1,2,3)

Scarce B and C, fairly common some years A; only in small flocks of up to twenty; during 1930s appeared in very large numbers at flowering eucalypts, flocks numbering hundreds sweeping over the countryside like Budgerigars. Breeding: last known October 1943 in

knotholes in Powder-barks, Wandooos and York Gums commonly October and November; C/4; in some years from 1930 to 1943 did not breed; generally highly nomadic.

**POLYTELIS ANTHOPEPLUS** Regent Parrot (ABC 1,3,4)

Scarce since about 1955 in small groups; three records of five or six at Seabrook during 1967 and twice in 1969; five birds 20 September 1971 at Glen Avon. Breeding: fairly common throughout Shire up to about 1950, sometimes in Salmon Gums and Powder bark-Wandooos during October and November.

**NYMPHICUS HOLLANDICUS** Cockatiel

Five on occasions from November 1936 to March 1937, in area of partly dead York Gums at Glen Avon; up to 25 from December 1937 to February 1938 in same place; again same time in 1938-39; last record of two birds January 1972 near Grass Valley (W. Smith); considerable numbers in eastern wheatbelt 1935-39 (JRM).

**MELOPSITTACUS UNDULATUS** Budgerigar (ABC)

Occasional: Seabrook, small flocks 1951-52; one 28 March 1972 (ALM), a few at Irishtown summer 1971-72 (R. MacKenzie), fifteen north of Jennacubbine 24 October 1971 (JRM); at Glen Avon, about fifty with Cockatiels from late November 1936, increased to nearly a hundred during summer 1937-38, reduced to thirty or so mid-summer of 1938-39; disappeared each winter from about February, appeared again early December (JRM); EHS recorded birds at Wooroloo 1951 only; suggesting that appearance in numbers is associated with widespread dry periods.

**PURPUREICEPHALUS SPURIUS** Red-capped Parrot (AB 2,7)

Fairly common A, scarce B, in areas of Marri and Flood Gums west of Avon but not along river; all records in B during summer and autumn (JRM); throughout year in A (W. Chitty).

**PLATYCERCUS ICTEROTIS** Western Rosella (AB 1,2,3)

Uncommon A, scarce B; never common since 1930; recently in B, three at Clackline March 1972, one Glen Avon 18 February 1970; often north of Bakers Hill (W. Chitty).

**BARNARDIUS ZONARIUS** Western Ringneck (ABC 1,2,3,4,5,7)

Common; east of Grass Valley the yellow-bellied *zonarius* dominant, the green-bellied *semitorquatus* west of Bakers Hill; most birds along Avon more like *semitorquatus* and the greatest change in colour and calls occurs east of the river; three blue and one red-phase birds during last ten years near Avon. Breeding: late September to November; C/4 and 5.

**PSEPHOTUS VARIUS** Many-coloured Parrot (C 1)

Uncommon; all records in south-eastern parts. Apparently scarce at Seabrook since 1930; eastern area of Mortlock valley seems favoured. Breeding: possibly near Grass Valley (ALM); young birds and pairs-noted here by Mr W. Smith.

**NEOPHEMA ELEGANS** Elegant Parrot (ABC 1,2,3,4)

Uncommon but occurs near some small areas of forest most of year; wide-ranging elsewhere; numbers fairly constant since 1940, but bird was rare before then. Breeding: not proved but birds inspect knotholes in Wandooos during September and October.

**CUCULUS PALLIDUS** Pallid Cuckoo (ABC 1,2,3,4,5,7)

Common migrant that varies greatly in numbers and in time of appearance; occasionally seen in March,

earliest 6 March, but not heard to call until rain and even then may stop calling if dry period follows early rain; calling as early as 9 April; most leave the district by early December, but occasional in January, latest 21 January. Breeding: courtship feeding noted in mid-July, but eggs are not usually found until early September and during October; found in nests of Singing Honeyeater, Brown Honeyeater, New Holland Honeyeater, both wattlebirds, Willie Wagtail, Magpie Lark and Black-faced Woodswallow.

**CACOMANTIS PYRRHOPHANUS** Fan-tailed Cuckoo  
(AB 2,3)

Uncommon but regular in heavily timbered country west of Avon between late March and mid-October, most often July and August. One at Seabrook 21 May 1971 and another 14 June 1972, only records east of river. Breeding: not proved.

**CHRYSOCOCCYX OSCULANS** Black-eared Cuckoo

Only records are two sightings by CFJ (1931) near Seabrook.

**CHRYSOCOCCYX BASALIS** Horsfield Bronze-cuckoo  
(ABC 1,2,3,5,7)

Regular migrant in varying numbers; calls as early as 17 March in 1965 and as late as 1 January in 1964; east of Avon commoner than the Golden Bronze-cuckoo in autumn and early winter, but from September to November vice versa. Breeding: eggs in nests of the Yellow-tailed Thornbill and Scarlet Robin in October.

**CHRYSOCOCCYX LUCIDUS** Golden Bronze-cuckoo  
(ABC 1,2,3,5,7)

Commonest bronze-cuckoo in central valley, from 26 April to December, most arriving in June and July; generally distributed during spring, particularly in years of early rains; most pass through area until September. Breeding: eggs found from first week in September to early November; Yellow-tailed Thornbill chief host, but Banded Blue Wren also parasitized.

**NINOX NOVAESEELANDIAE** Boobook Owl (ABC 1,2,3,4)

Uncommon, widespread in small numbers but not heard as often as during 1930s. Breeding: in hollow trees, October and November; C/2.

Near Avon a larger dark owl has been seen once by torch light while flying, calling with piercing scream of Barking Owl *N. connivens*; call heard on other rare occasions during winter only.

**TYTO ALBA** Barn Owl (ABC 1,4,5)

Fairly common particularly in winter in B, no records A, less common C than Boobook Owl. Often visit farm buildings during autumn and winter, when dead birds found in farm paddocks. Breeding: one nest in hollow Flood Gum on Avon October and November 1947, three fledgelings on wing early December.

**TYTO NOVAEHOLLANDIAE** Masked Owl (A?, BC 1,2)

One seen on several occasions during October 1971 in thick Powder bark-Wandoo forest at Glen Avon; one 1 May 1972 at Seabrook. White owls are reported in A.

**PODARGUS STRIGOIDES** Tawny Frogmouth  
(ABC 1,2,3,4)

Fairly common C, decreasing to uncommon A; common C and B during 1930s; west of Avon nesting birds have decreased severely since about 1950; most often seen at night along roads. Breeding: late September to December; C/2 usual.

**AEGOTHELES CRISTATUS** Owlet-nightjar

One flushed from hollow tree early November 1948; and one bird in hole in tree 16 October 1971 at Glen

Avon. Breeding: pair nested south of Grass Valley October 1970 (C. Richter).

**EUROSTOPODUS GUTTATUS** Spotted Nightjar

Single bird 6 May 1953, identified on bitumen road-way near Glen Avon. A smallish nightbird, with eyes showing bright red in light, in this area since previous March.

**APUS PACIFICUS** Fork-tailed Swift

About twenty birds 14 February 1955, in late afternoon moving south-east over Avon river flats in light rain, which started three days of cyclonic conditions moving south, which deluged area with 180 mm of rain; about fifteen swifts were also seen at high altitude soon after sunset on 26 March 1960, with no evident fork-tail but conditions of light bad under stormy cloud; again heavy rains occurred for next few days and there had been some lighter rains two days before.

**DACELO NOVAEGUINAE** Laughing Kookaburra,  
Introduced (ABC 1,2,3,5,7)

Common resident A and B, scattered and uncommon C; population seems fairly steady since about 1940. Breeding: had started along Avon river by 1926, October and early December; C/3.

**HALCYON PYRRHOPYGIA** Red-backed Kingfisher

Single injured bird near road, Seabrook, September 1960.

**HALCYON SANCTA** Sacred Kingfisher (ABC 1,2,3,5,7)

Widespread migrant, usually appearing during first fortnight of October or fortnight earlier if weather hot and dry; earliest date 18 September 1972 B; less common C and A; seldom seen after end January, none recorded over winter; numbers vary greatly everywhere; passes through but may nest some years. Breeding: in hollow trees from middle October to early December; C/4 and 5.

**MEROPS ORNATUS** Rainbow Bee-eater  
(ABC 1,2,3,4,5,7)

Most regular migrant of district; earliest 18 September, in the first two weeks of October become common; first arrivals appear to pass through, later arrivals nest within week of taking up residence. From mid-December birds flock and sometimes establish communal roosts; these flocks vary from a few to 100+ and may remain together for several weeks before leaving for north; by middle March all have left; last record 16 March. Breeding: in any area of suitable soil with fairly open visibility and perches; C/4 and 5.

**CHERAMOECA LEUCOSTERNA** White-backed Swallow  
(BC 1,3,4)

Generally distributed; at all times of the year but not common; absent from forested parts although nesting as far west as Clackline. Breeding: favours red-loam banks of creeks, but also in gravel and sand pits; C/4 usual.

**HIRUNDO NEOXENA** Welcome Swallow (ABC 4,5,6,7)

Common most of the year, especially near water and human habitation; large flocks may gather near water in early summer, usually with Tree Martins, but numbers diminish greatly during February and March, increasing again in September. Breeding: from September to December; C/2 to 4.

**PETROCHELIDON NIGRICANS** Tree Martin  
(ABC 1,2,3,4,5,6,7)

Very common at all times of the year; during summer and autumn often in very large flocks, occasionally

of 1,000+. Breeding: from September to December; C/3 and 4; though seen entering holes in trees from January to April, probably not breeding then; pair has nested in hollow block under decking of a bridge for the past two years.

**PETROCHELIDON ARIEL** Fairy Martin (BC 4,5,6,7)

Sporadic; in some years quite common along the river valley and in C, arriving in early October. Breeding: never evenly distributed; not often in same locality in successive years; at Seabrook nested in newly built railway culvert in November and December 1965, in October and November 1966, and in November 1972; culverts are most favoured nesting sites; C/4 and 5; nests under wooden road bridges often suffer from the vibrations caused by vehicles.

**ANTHUS NOVAESEELANDIAE** Australian Pipit (ABC 4)

Common. Breeding: usually from September to end December; display flights as early as March or April after heavy rains; nest at Seabrook in mid-June 1963 after heavy rains in May was abandoned, but one found 29 June, C/3, was being brooded; nest found in October 1971 in tall grass almost entirely above ground-level; some grass was used as covering over top of nest, forming a hood, so that entrance was on one side; nest middle December 1964 on bare flat ploughed ground with three freshly hatched chicks.

**CORACINA NOVAEHOLLANDIAE** Black-faced Cuckoo-shrike (ABC 1,2,3,4,5,6,7)

Common; during the autumn large groups of up to thirty may be seen. Breeding: October and November; C/3 normal.

**LALAGE SUEURII** White-winged Triller (ABC 1,2,3)

Regular migrant in varying numbers; some years very common B and C, other years only few; less common A; earliest record 10 July 1971, usually arrive C late August or early September, B late September and early October; stay till late January or February. On 12 May and 21 June 1953, five at Glen Avon, one being a male in eclipse plumage, another in eclipse plumage at Seabrook on 1 June 1968 (Milhinch 1969), and another in transitional plumage at Seabrook on 12 May 1972. Breeding: October and November, usually in Marri trees in B and in York Gums in C; C/3.

**POMATOSTOMUS SUPERCILIOSUS** White-browed Babbler (BC 1,2,3)

Fairly common with a few colonies as far west as Bakers Hill; patches of Holly-leaved Dryandra form suitable habitat west of the river, but east of it Jam trees and Casuarina are most favoured; extension of this vegetation west through Spencers Brook to Clackline provides a salient into forest area; birds move nomadically about in these areas. Breeding: eggs found from July to October; often nests early west of the river; during July and August nests may be sodden without causing too much mortality, because young have been found during August; in C Needlewood *Hakea preissii* used for nesting; C/3.

**MEGALURUS GRAMINEUS** Little Grassbird (B 7)

Rare and probably not many because suitable habitat lacking; recorded at Glen Avon most years during October to April since 1964; in Kikuyu grass round a dam and in rank Paspalum grass bordering a creek; not seen during winter.

**ACROCEPHALUS STENTOREUS** Reed Warbler (AB 7)

Uncommon migrant; suitable habitat lacking; has appeared at the Glen Avon dam each year from 1965

to 1969 in early October and remained until January, living and nesting in Elephant grass; also near Wooroloo in Toodyay Shire, in cumbungi along stream. Breeding: in late October and during November; C/2 and 3; two pairs at most in the small area available at Glen Avon.

**CINCLORAMPHUS CRURALIS** Brown Songlark (ABC 4)

Migrant, numbers fluctuate greatly; usually completely absent from A, but more clearing may change this; in B and C arrives as early as June and stays till February, although main arrival is in July in C and late September to October in B; favours completely open fields; in some years most birds pass through and few, if any, stay to nest; in 1955 and in 1964 seen occasionally through winter in C and one record for May 1956. Breeding: in years when numbers stay, mostly during October and November; C/3.

**CINCLORAMPHUS MATHEWSI** Rufous Songlark (ABC 4,7)

Migrant, movement similar to those of Brown Songlark; some years quite plentiful, others only a few; earliest record 29 June 1965; most have left by end of December, though sometimes seen till first week February, e.g. 1961 and 1964; though usually absent from A, clearing may benefit it. Breeding: territories established in late September; eggs found October and November; C/3; favours lightly timbered areas of grassland. Nesting of both songlarks appears closely linked with maturing of grassland and crops.

**MALURUS SPLENDENS** Banded Blue Wren (ABC 1,2,3,5,7)

Fairly numerous; once common, particularly along rivers; numbers have fallen severely since about 1950; still well established in bushland in A, but numbers vary greatly in B and C, where after big decline there has been slight increase since 1968. Breeding: from October to December, usually in small bushes when away from the water-courses, but in paperbarks along rivers even to 10 m from ground; once in pile of stones 100 m from nearest bush; C/3 and 4.

**MALURUS LEUCONOTUS** Blue-and-white Wren

Mr W. Smith reported one male and apparently two young birds along a creek c. 8 km east of Northam.

**GERYGONE FUSCA** Western Warbler (ABC 1,2,3,5,7)

Common resident; along Avon often nests in paperbarks, Flood Gums and Wandoo forest; loss of habitat by clearing paperbarks from Avon has severely reduced nesting; in C favour Jam trees mixed with York Gums; regularly visits native trees round homesteads during summer, autumn and early winter. Breeding: usually during October to December; C/3.

**SMICRORNIS BREVIROSTRIS** Weebill (ABC 1,2,3,5,7)

Common at all times of year in A and B, sparse in C and tends to be nomadic. Breeding: generally from late October to early January; C/2 to 4; favours trees with particularly pendulous branches and young saplings, notably York Gums, in B and C.

**ACANTHIZA APICALIS** Broad-tailed Thornbill (ABC 2,3,5,7)

Scarce in B and C, more common A; usually along streams near Avon; in A widely distributed in forest country, occupying similar habitat as Western Thornbill, though not nearly so numerous as that bird, and also favours valleys. Breeding: from July to October; C/3; one nest found behind dry cracked bark of dead Jam tree, others in paperbarks or Needlewoods; all well concealed.

**ACANTHIZA UROPYGIALIS** Chestnut-rumped Thornbill  
(C 1,6)

May be extending range south-westwards; first recorded at Seabrook May 1955 and was seen periodically during next ten years; now seems permanent resident in C where recorded regularly (ALM). Breeding: nest south of Grass Valley during October 1970 (C. Richter); three young being fed by adults at Seabrook on 18 October 1972 (ALM).

**ACANTHIZA INORNATA** Western Thornbill (AB 2,3,5,7)

Common in A and B; absent east of Avon, but rarely seen along river and groups come down streams leading to it from the west; in danger in A and B because breeding habitat is being destroyed. Breeding: September and October; C/2 and 3; nests in very low scrub or under dry skirts of Blackboys *Xanthorrhoea reflexa* in forest.

**ACANTHIZA CHRYSORRHOA** Yellow-tailed Thornbill  
(ABC 1,2,3,4,5,7)

The most common thornbill; in B decreased considerably over past twenty years, probably because habitat, particularly Jam trees, has been cleared; small flocks visit farm gardens at all times of the year. Breeding: June to December; mid-season nests often parasitized by Golden Bronze-cuckoo; C/3-4.

**EPHTHIANURA ALBIFRONS** White-fronted Chat  
(ABC 1,3,4,6)

Generally nomadic B and C; uncommon A; numbers vary considerably; flocks of 50+ feed about lucerne paddocks from December to April, thriving on Rutherglen Bugs when these are present; flocks also round edges of small lakes in C during summer. Breeding: most common in seasons of early rainfall; nests found from August to October; one early nest on 2 May 1971; in tall grass, in dead leafy branches on the ground, in small shrubs and at base of a clump of trees; in open fields, along roadsides, in open timbered hilly country and near a small granite outcrop in heavy forest; C/3.

**MICROECA LEUCOPHAEA** Jacky Winter (B 1)

Uncommon; probably resident near Glen Avon because recorded there all year; regular in garden during summer. Breeding: in hilly country west of Avon from August to October in York Gum and Jam trees; C/2.

**PETROICA MULTICOLOR** Scarlet Robin (AB 2,3,5,7)

Common and generally distributed A; towards Avon mostly along streams but, though common along Avon, not seen in C. Breeding: July to October; C/3. Red-capped and Scarlet Robins overlap in B west of Avon; often seen together during autumn, usually as single pairs of both; sometimes Red-capped Robins have nested commonly in September and October alongside Scarlet Robins among the river paperbarks; more usually the two species nest in separate areas: Red-capped in York Gum and Jam trees, Scarlet along streams in Flood Gums.

**PETROICA GOODENOVII** Red-capped Robin (ABC 1,5,7)

Generally distributed and common B and C; much more sparse in A, mainly where isolated patches of Jam trees provide some suitable habitat. Breeding: August to end October, usually in Jam trees; C/3.

**PETROICA CUCULLATA** Hooded Robin (ABC 3,6)

Scarce within the Shire; in B west of Avon was localized among ring-barked timber, breeding until 1945. Pair of birds north of Clackline on 9 October 1963; records at Wooroloo in 1951-52 by EHS. Breeding: most nests on tree stumps.

**EOPSALTRIA GRISEOGULARIS** Western Yellow Robin  
(AB 2,3)

Common resident A and approaches Avon in B where Wandoo and Powderbark-Wandoo forest occurs; this type of forest is its favoured habitat and birds are found in it all year, but this habitat has now been mostly cleared; apparently it will not occupy area of York Gums. Before 1900 a forest of York Gums and Jam trees existed across B and C near Avon, and it would be interesting to know if the birds ever have occupied this part of the area. Breeding: September and October; C/2.

**RHIPIDURA FULIGINOSA** Grey Fantail (ABC 1,2,3,5,7)

Fairly common resident along Avon and westwards; often visits gardens during late summer, autumn and early winter near Avon; to east, though recorded each month, definitely declines during summer. Breeding: September to November, along Avon and westwards; C/2 and 3; on 23 January 1968 birds still feeding young at Seabrook; less nesting along Avon recently, possibly because of much clearing of paperbarks from river bed, which were much favoured.

**RHIPIDURA LEUCOPHRYS** Willie Wagtail  
(ABC 1,3,4,5,6,7)

Common, generally distributed except in very heavy forest, where however found along more open streams or in clearings. Breeding: August to January; in many situations, usually on a limb of tree sheltered by foliage, but sometimes on bare limbs open to sun, sometimes in buildings, even on machinery left standing; C/3 usual, 4 occasionally.

**SEISURA INQUIETA** Restless Flycatcher (ABC)

Not often seen, generally nomadic and usually in one locality for only a few days before moving on. Breeding: two nests found, both in October and both in Flood Gum near water; 1 x C/3.

**PACHYCEPHALA PECTORALIS** Golden Whistler  
(AB 2,3,7)

Distribution almost identical with that of Western Yellow Robin except that it has been seen rarely along Avon and in Flood Gums bordering creeks leading into river from west; generally uncommon. Breeding: October; usually in taller scrub understorey of forest, which is distinctly favoured and where bird is always found.

**PACHYCEPHALA RUFIVENTRIS** Rufous Whistler  
(ABC 1,2,3,5,7)

Common resident; in most types of forest and quite commonly about farm gardens. Breeding: September to December; once half-fledged young in nest during first week of January; C/3 usual.

**COLLURICINCLA RUFIVENTRIS** Western Shrike-thrush  
(ABC 1,2,3,5,7)

Although widespread, nowhere as numerous as last species; apparently somewhat nomadic, often visiting farm gardens for several months before moving on. Breeding: September to November; in holes in trees, forks of paperbarks and Jam trees, and once at Seabrook in hole in brick wall of out-building, 30 m from a dwelling; C/3.

**NEOSITTA PILEATA** Black-capped Sittella  
(ABC 1,2,3,4,5,7)

Fairly common, nomadic, and usually in small flocks moving from tree to tree; seen travelling along fence lines in open country and searching for insects on fenceposts. Breeding: October and November; C/3.

**CLIMACTERIS RUFUS** Rufous Tree-creeper (ABC 1,2,3)

Fairly common in heavy forest west of Avon; scarce to east; seen c. 8 km north of Northam and Mr C. Richter recorded it south of Seabrook, both recordings in York and Salmon Gums; resident in areas of Powderbark-Wandoo and Wandoo in B. Breeding: during October; C/2.

**DICAENUM HIRUNDINACEUM** Mistletoebird (ABC 1,2,3)

Sporadic but widely distributed in small numbers about forest in A and B, fairly common resident in C, particularly in Jam trees and casuarinas bearing mistletoe; often in gardens.

**PARDALOTUS PUNCTATUS** Spotted Pardalote (AB 2,3)

Uncommon: in A and B only as far as Wandoo and Powderbark-Wandoo approaches Avon, where seen from May to October; not recorded C nor in Avon valley. Breeding: not known.

**PARDALOTUS SUBSTRIATUS** Red-tipped Pardalote (ABC 1,2,3,5,7)

Widespread and generally common, but may leave the wetter western area of A during winter; resident in forest country of B, but numbers fall in river valley during late summer and winter; resident C, but generally fewer during summer. Breeding: August to January; C/3 and 4; observed carrying nesting material into holes in barn during late April; eggs found early May but no brood raised 1934, 1955 and 1971.

**ZOSTEROPS GOULDI** Western Silvereye (ABC 1,2,3,5,7)

Common, though in C it has a more restricted habitat and is more nomadic according to supply of food; generally common in gardens everywhere and always in paperbarks along the river. Breeding: August to November in forest of A and as late as January along rivers in B; heavy flowering of paperbark along the river in November coincides with peak of nesting; C/3.

**LICHMERA INDISTINCTA** Brown Honeyeater (ABC 1,2,3,5)

Common, some always present; numbers increase in area of river and forest west of Avon during late winter and spring; common in gardens and nests in gardens at Northam. Breeding: September to November; C/2.

**MELIPHAGA VIRESCENS** Singing Honeyeater (ABC 1,2,3)

Common resident. Breeding: end of August to February; C/3 usually; one nest seen in June 1970 in a garden.

**MELIPHAGA CRATTIA** Purple-gaped Honey-eater

Ten or twelve birds in flowering Flood Gums on Avon on 10 October 1969, a drought year.

**MELIPHAGA ORNATA** Yellow-plumed Honeyeater (ABC 1,2,3)

Uncommon west of Avon where almost exclusively in Wandoo forest; often in Julimar State Forest in Shire of Toodyay; Wandoo forest has been mostly cleared in the Northam Shire; on 8 August 1972 small group in flowering York Gum at Seabrook. Breeding: probable west of Toodyay; young seen 4 December 1959.

**MELITHREPTUS BREVIROSTRIS** Brown-headed Honey-eater (ABC 1,2,3)

Fairly common, nomadic in B and C; penetrates A particularly in Wandoo forest; in B and C usually in York Gums. Breeding: September at Seabrook and October at Glen Avon.

**MELITHREPTUS LUNATUS** White-naped Honeyeater (AB 2,3)

Fairly common west of Avon, absent from east, probably eastern boundary of Marri trees is birds' eastern boundary. Breeding: probably west of Toodyay; not known in Northam Shire.

**PHYLIDONYRIS NOVAEHOLLANDIAE** New Holland Honeyeater (AB 2,3)

A resident west of Avon, isolated small flocks near river; common A; often visits farm gardens west of Avon in recent years. Breeding: usually September to November; C/2 and 3; but in favoured areas of flowering scrub on Perth road in B eggs found second week of December 1953.

**PHYLIDONYRIS NIGER** White-cheeked Honeyeater (AB 2,3)

Uncommon and scattered; observed in May, September and October in laterite country. Breeding: one nest with two fledgelings 10 October 1971 (Toodyay west).

**PHYLIDONYRIS ALBIFRONS** White-fronted Honeyeater

One 2 April 1972 feeding among flowering mistletoe in York Gum at Seabrook; two there 18 and 19 April, four there 21 and 28 April 1972.

**GLICIPHILA MELANOPS** Tawny-crowned Honeyeater (AB 2)

Uncommon in B, during September to November common in small areas of heath in A. Breeding: October; C/2 (Toodyay west).

**ACANTHORHYNCHUS SUPERCILIOSUS** Western Spinebill (AB 2,3)

Fairly common resident west of Avon, but not seen in river valley; absent east of river. Breeding: early October to mid-November; C/2.

**MANORINA FLAVIGULA** Yellow-throated Miner (BC 1,3)

Common C, in well-separated colonies; some movement occurs according to supply of food.

In Avon valley apparently a remarkably rigid frontier from Northam into Toodyay Shire, passing between Irishtown and Glen Avon and lying in the York Gum and Jam forests about 5 km east of western boundary of this type of habitat. During forty years only two birds seen west of this line, during thunderstorm; but birds found east of line every year and at most times of year if searched for. This boundary probably turns due west one kilometre north-west of Northam to just north-east of Clackline, running within the westward extension of this class of country that runs past Spencers Brook. Why the habitat is not completely occupied, although it runs through areas with rapidly increasing rainfall, is not known; it is specially curious that it is occupied north and west of Spencers Brook. Breeding: in C September and October.

**ANTHOCHAERA RUFOGULARIS** Spiny-cheeked Honey-eater

Perhaps casual in B and C; a pair lived at Glen Avon from early September to early November 1963 in a patch of flowering wattle along a creek 3 km west of Avon; in September and October 1966 a single bird lived in flowering wattle at the dam near the Glen Avon homestead; also recorded 18 September 1972.

**ANTHOCHAERA CHRYSOPTERA** Little Wattlebird (AB 1,2,3)

Fairly common in A to a few kilometres west of Avon, occasionally eastwards into areas of Dryandra

east of Avon; everywhere in Avon area strongly associated with Holly-leaved Dryandra *Dryandra floribunda*; numbers increase in winter and early spring. Breeding: August, September and October, usually in Dryandra and Blackboys; C/1 always.

**ANTOCHAERA CARUNCULATA** Red Wattlebird  
(ABC 1,2,3,5,7)

Widely distributed, some seen all the year; during winter and early spring, movement occurs in Avon Valley, generally from south-east to north-west; only few remain in C and Avon valley during summer. Breeding: August to November; C/3 usual; number breeding varies considerably each year; one nest found built in old Magpie Lark's nest.

**POEPHILA GUTTATA** Zebra Finch (BC 1)

Common in C in scattered communities; along Avon between Northam and Toodyay; south of Northam westward up Spencers Brook valley to Clackline in B; western boundary is similar to that of Yellow-throated Miner, however the Finches do move west during dry periods; used to nest near Clackline about 1935 to 1940, also at Glen Avon and two km east of Toodyay but disappeared soon afterwards; appeared in 1949 and 1950 at Glen Avon but did not breed; reappeared during summer 1969-70 and have remained and nested since; as also happened at Clackline. In these localities not associated with Needlewoods *Hakea preissii*, which they strongly favour for nesting about Grass Valley, Seabrook and along Avon south of Spencers Brook, and where they maintain large populations; elsewhere usually nest in mistletoe on Jam trees; small groups move about much during summer and autumn, particularly in valleys at western edge of range. Breeding: September to December in B, as late as February in C; C/3 to 5; sometimes entering farm gardens and nesting there.

**GRALLINA CYANOLEUCA** Magpie Lark (ABC 1,3,4,5,7)

Common B and C, but less common A; at farm dams in A where clearing of forest may have benefited the bird; much less common now in B and C than it was 30 to 40 years ago; though foraging and roosting flocks still form during summer and autumn, flocks seldom exceed twenty or thirty, which contrasts with flocks of several hundred before. Breeding: in good seasons nests built as early as 22 June, e.g. 1967, but usual nesting late July to November; C/3 to 4.

**ARTAMUS PERSONATUS** Masked Woodswallow (ABC)

Sporadic visitor, rarely in flocks; EHS recorded birds at Woolooloo in October 1951 and April 1953; flock high over Avon valley at Glen Avon on 10 November 1970, flying south-east. Breeding: just outside Shire boundary near the Northam-Goomalling road on 27 October 1964.

**ARTAMUS CINEREUS** Black-faced Woodswallow  
(ABC 1,3,4)

The common woodswallow in B and C, unusual in A; often roosts communally. Breeding: October to January; C/3 and 4; for three years birds nested in same stump at Seabrook; C/5 each time; usually nest in large shrubs, small trees and particularly in the mistletoe on Jam trees, and not uncommonly on top of stooked hay; formerly in brushwood rails of Harper fences.

**ARTAMUS CYANOPTERUS** Dusky Woodswallow (AB 2,3)

Uncommon in A, as far east in B as the limit of Powderbark-Wandoo forest west of river, absent east of river; liable to appear at any time of year a few

kilometres west of Avon in small numbers, more often from April to September.

**STREPERA VERSICOLOR** Grey Currawong (AB 1,2)

Sparingly distributed in forests west of Avon in most months of year; occasionally near Avon in winter and early spring. Breeding: twice proved during October in York Gums.

**CRATICUS NIGROGULARIS** Pied Butcherbird (BC 1,4)

Uncommon during autumn and winter in B and C and has been so for past forty years. Breeding: pair nested at Glen Avon during October 1971 and three birds remained; again during October 1972, and apparently now resident, being seen most months during 1972.

**CRATICUS TORQUATUS** Grey Butcherbird  
(ABC 1,2,3)

Widespread; once common, has decreased considerably over last twenty-five years; still fairly common in C, uncommon elsewhere. Breeding: September to November; C/3 and 4.

**GYMNORHINA DORSALIS** Western Magpie  
(ABC 1,2,3,4,7)

Common resident bird in B and C, and perhaps in older established clearings in A, because it is well established in cleared parts of similar forest in Toodyay Shire; in B marked decline from about 1940 to 1955; since then birds have re-established themselves to about 1930 level. Breeding: late August to early December; C/3 and 4; colour of eggs is not very variable in each nesting group of birds; it tends to vary greatly between groups, from greenish blue ground-colour with brown streakings to a mauve-grey ground-colour with brown and purplish blotches.

**CORVUS CORONOIDES** Australian Raven  
(ABC 1,2,3,4,5,6,7)

Common widespread resident; some fluctuation in numbers in places according to supply of food; when breeding it is distributed evenly; later in the summer form flocks. Breeding: late July to October; C/3 and 4.

**CORVUS BENNETTI** Little Crow (BC)

Not resident, usually only as bird of passage, often in flocks of several hundreds to south in early summer and returning north in mid-summer and autumn; number of flocks varies from year to year; occasionally remain in district for short period, e.g. 1969 when large flocks remained in B and C from April to late July (Milhinch 1969).

Status of Raven, Little Crow and Crow *C. orru* in Avon valley is by no means clear and we have not investigated these birds carefully. Ravens apparently flock to some degree in late summer and autumn at concentrations of carrion or other food. Little Crows flock with Ravens at such places and calls can be distinguished clearly. Crows may move into Avon valley from east at same time, but have not yet been identified. In years of normal rainfall with seasonal break in early May, Ravens only present by end of June, dispersed with many birds already in nesting territories.

## DISCUSSION

### Frontiers

The status of many species changes across the central region of the Shire, evidently because rainfall also changes dramatically. Also in this central region the Avon River has eroded the lateritic plain and thus breaks up habitats at a critical point.

Before European settlement, forests of York Gums and Jams formed an almost unbroken belt for 100 kilometres along the Avon valley, extending east 15–30 kilometres. This open forest, with annual grasses and herbage as ground-cover, formed a completely distinct type of habitat along the Avon valley and provided the initial impetus for European settlement. Some birds, e.g. Yellow Robins and Golden Whistlers, did not enter it, even though they occurred commonly next to it, as they still do. East of the Northam Shire beyond this belt other birds appear although rainfall does not decrease much.

A number of species of special interest for the present distribution east and west of the belt of York Gums and Jams occur at Nangeenan (Sedgwick 1937) and at Kellerberrin and Kwolyin (Ford and Stone 1957) on the upper watershed of the east Mortlock River, about the centre of the eastern wheatbelt, 100 kilometres or so east of Northam, and also at Tammin and Cunderdin (JRM, pers. obs. 1933–38). The Western Rosella, Western Yellow Robin and Golden Whistler have been recorded in these areas, and also west of the Avon, but are completely absent in the belt of York Gums of the Shire. The Rosella and Yellow Robin are distinct subspecifically and the Golden Whistler may be so. The Scarlet Robin occurs at Nangeenan, but not east of the Avon at Northam except occasionally and then within two or three kilometres of it.

Since clearing of the York Gum forest, the Chestnut-rumped Thornbill has occupied some of the country and nested, but the Red-backed Kingfisher, Southern Scrub-robin, Crested Bellbird, Western Whiteface, Redthroat, White-eared Honeyeater, White-fronted Honeyeater and Spiny-cheeked Honeyeater have remained to the east, though the last may be moving in. Zebra Finches and Yellow-throated Miners have always been in localized parts of it and show no tendency to move west. Open fields partly explain why the Australian Dotterel has appeared.

#### Rainfall cycles

There are definite long-term cycles of rainfall. Figure 4 shows average rainfall in periods of three years from 1931 to 1971 based on records at Glen Avon (Masters unpublished). G. H. Burvill (1970) gave similar data for the eastern and north-eastern wheatbelt. The Galah, Crested Pigeon, Black-shouldered Kite, Chestnut-rumped Thornbill, spoonbills and some ducks have come to the area during these thirty years of steadily increasing precipitation.

The Large Egret is apparently staging a reappearance after being absent for about twenty years.

These cycles of about ten years cause fluctuations in numbers. Cockatiels and Budgerigars appear com-

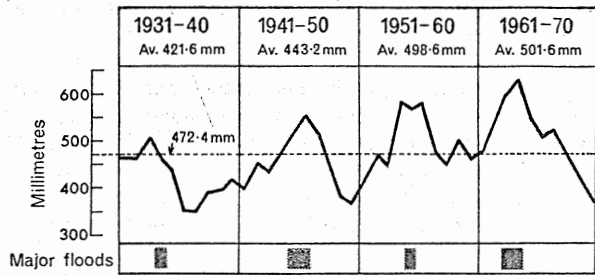


Figure 4. Annual rainfall in Shire of Northam from 1931 to 1970.

monly during droughts, Marsh Crakes and Black-tailed Native-hens in wet periods. Flooding in the eastern wheatbelt during wet phases influences waterbirds in two ways, by increasing movement of the birds and by delivering salt water into the Avon River. The increase in salinity of the Avon River has affected the habitat and probably accounts for the disappearance of Black Bittern and Swampphen from the river and the appearance of Chestnut-breasted Shelducks during the last two decades. To what extent the Avon east of the Jarrah forest provides a refuge and avenue of movement for many species needs study.

#### Change of status

The status of many species has changed over the years. Since about 1945 agriculture has expanded at an increasing rate and specialized forest habitat has been reduced. Streams everywhere are becoming increasingly salty, but salinities in the upper Avon and Mortlock changed annually and in the long term before agriculture started. Ensign Robert Dale (1830), first explorer of the Avon valley in 1830, stated that pools in the upper Avon were salty in summer and James Drummond (Erickson 1969), a later explorer of the Mortlock, mentioned the salt marshes.

Clearing since 1900 has lengthened the period of flow from the salt lakes during wet seasons, these lakes being evaporating pans at other times. Some of the increased salinity is from local streams particularly east of the Avon and has been caused by a rise of the water-tables after removal of the forest. Since about 1944 the average salt content of Avon and lower Mortlock has increased rapidly and, perhaps more significantly, a far greater range of salinity occurs each year.

As well as the direct effects of clearing and domestic animals, the rabbit has affected all habitats. It invaded the Northam Shire during the 1920s and reached plague proportions in ten years. Until myxomatosis reduced their numbers tremendously during the 1950s regeneration of many native plants was

almost impossible, as is easily seen along roads and in reserves where sheep do not graze; there are many young Jams and few very old ones. The middle-aged generation with its associated mistletoe *Loranthus* sp is scarce and this may have importantly affected the Yellow-tailed Thornbill, Mistletoebird and Zebra Finch, among others, in the central and eastern regions.

All native plants, particularly acacias and casuarinas, but least eucalypts, have been affected to some extent. Even in the western forests, where rabbits were never so numerous, a greater variety of plants has returned to virgin bushland during the past fifteen years.

In the eastern region where clearing on a large scale occurred long before 1945, species have increased since 1930. Five new breeding species have appeared, Galah, Wood Duck, Crested Pigeon, Black-shouldered Kite and Chestnut-rumped Thornbill; the Australian Dotterel, corellas and Yellow-billed Spoonbill visit. No species appears to have been lost.

The central region has lost two nesting species, the Swamphen and Black Bittern, and gained seven, Galah, Crested Pigeon, Corella, Wood Duck, Chestnut-breasted Shelduck, Red-necked Avocet and Black-shouldered Kite. New visitors are the Yellow-billed and Royal Spoonbills, Pied Stilts and Large Egret.

In the western region nesting birds do not appear to have changed. However in all three regions for most species, particularly those in the specialized Jarrah and Wandoo habitats, habitat decreases continuously and numbers of individuals of some species decreases alarmingly. An outstanding example is the Purple-crowned Lorikeet; at times during the 1930s in thousands, it is now seldom seen and then only few. Regent Parrots have been reduced to a remnant. The Painted Button-quail, Yellow Robin, Golden Whistler, Western Thornbill, White-cheeked, New Holland, Tawny-crowned and White-naped Honeyeaters, Western Spinebill and Little Wattlebird face a difficult future. The White-cheeked and New Holland Honeyeaters have found their way east into farm gardens near Avon during the last decade but have not bred successfully.

Clearly the Long-billed Corella and Pink Cockatoo have declined greatly in the last 130 years (Whittell 1941). Diamond Doves still occur but are not known to irrupt in numbers, and Whittell does not mention Zebra Finches. Unfortunately it is difficult to determine the precise localities where all the specimens from the Avon valley were collected because Gilbert and his assistants travelled well east and north of Northam Shire. We have not recorded eight species likely to have occurred in the Avon valley. The Crested Bellbird, Redthroat, Field-wren,

Yellow-fronted Honeyeater and Pied Honeyeater could have occurred then in Mallee heathland and bordering acacia forest of the eastern region. We have an unconfirmed report of Pied Honeyeaters at Clackline in open forest heathland during May 1971. Chestnut Quail-thrushes could have occurred in dry lateritic breakaways in all three regions; if so, it is difficult to explain why they have gone or not appeared because such places have only been developed recently, but more frequent bushfires may have been critical. The Grey Falcon and Ground Cuckooshrike were in the area and may still return to the more open forest and farmlands. All other species mentioned by Whittell still occur.

Study may show that clearing of Jarrah forest leads to further collapse of the environmental frontier in the Avon valley. Some inland birds have quite successfully invaded wetter areas. Others, notably Zebra Finches and Yellow-throated Miners, have remained remarkably fixed to established frontiers.

It is from an analysis of the species occupying the three districts that the frontier aspect of the central district is seen, and also the importance of the Avon River-habitat. For convenience the status and occurrence of some species are summarized in Appendices 1 and 2 to show this more clearly.

#### CONCLUSION

It seems possible that there are as many species of birds to be found in the Shire of Northam in 1973, as when John Gilbert first came here in 1839, though they are not all the same ones. Should this sound too optimistic an assessment, let it be tempered with the thought that it is hard to visualize any new type of habitat developing, only the final destruction of some existing ones.

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J. R. MASTERS, *Glen Avon, Box 44, Northam, WA 6401.*

A. L. MILHINCH, *Seabrook, Box 179, Northam, WA 6401.*

QUON  
~~QUON~~ RIVER.

MUNRO.

DATE: 8/9/76.

~~WATER~~ WATER LEVEL: Reasonably high and flowing steadily.

---

MUNRO, CANE.

DATE: 24/10/77.

WATER LEVEL: No flow through numerous pools, some of which are quite deep.

WATERFOWL: Small Flocks Grey Teal. Very few  
Mourning Doves.

BREEDING: 1 Brood hen - Flying juveniles observed.

26

DEPT. FISHERIES AND WILDLIFE  
PINGELLY, W.A. 6308.

---

Supervising Wildlife Officer,  
Dept. Fisheries and Wildlife,  
108 Adelaide Terrace,  
PERTH. W.A.

WETLAND INSPECTIONS - DISTRICT NINE (PINGELLY)

On Sunday December 4, 1977 an inspection of the wetland system south of Wagin was carried out.

Below is a list of the lakes inspected, their general condition and the waterfowl which inhabit them.

PARKEYERRING LAKE No. 10733 (Recreation)  
Very low, no waterfowl life.

LAKE QUARHING No. 12236.  
Low, however supporting high concentrations of Mountain Duck and Banded Stilts.

LITTLE NORRING LAKE No. 10470 (Water).  
Nearly dry, no waterfowl life.

NORRING LAKE No. 17253 (Recreation and Watering Place).  
Very low. High concentrations of Swan and Mountain Duck. Moderate numbers of Grey Teal, Black Duck, Maned Geese, Little Grebe, Coot and Banded Stilts.

FLAGSTAFF LAKE No. 17254 (Public Utility).  
Nearly dry. No waterfowl life.

WARDERING LAKE RESERVE No. 17258 (Nature Reserve).  
Good water level. Moderate numbers of Mountain Duck, Black Duck, Grey Teal, Coot, Swan and White Egret (1).

QUEEREARRUP LAKE No. 17255 (Recreation)  
Very low. Mountain Duck only.

LAKE CHARLING No. 22666 (Recreation).  
Nearly dry. No waterfowl life.

MURAPIN LAKE No. 17257 (Game Reserve).  
Nearly dry. No waterfowl life.

MARTINUP LAKE 17055 (Game Reserve)  
Very low although supporting moderate numbers of Banded Stilts, Grey Teal and Mountain Duck.

WARDERING SPRING LAKE  
Nearly dry. No waterfowl life.

SMALL LAKE Dry.

The above terms of moderate and high concentrations of waterfowl may be interpreted in this manner: Moderate concentrations are numbers of waterfowl two hundred to five hundred per specie and high concentrations are numbers of specie over five hundred.

The general waterfowl population throughout District Nine is very low due to the fact that most wetland situations are dry or very low.

Many of the farm dams throughout the district are also low or dry. Problems related to Mountain Duck and Maned Geese on farm dams have been few this season and only one damage permit has been issued for these purposes.

The Yealering group of lakes are dry with the exception of Yealering Lake itself. It is now about one metre in depth and is the only reasonable stretch of water in that area. Mountain Duck, Grey Teal and Swan are in moderate numbers while the following specie are in numbers less than moderate: Black Duck, Banded Stilt, Coot, White-faced Heron (2), Silver Gull, Little Pied Cormorant (4), Large Pied Cormorant (4) and Little Grebe.

The Northern Arthur River reserve system which includes Toolibin and Tarblin Lake is dry.

The Beverley Lakes reserve system is very low and high in salt content. Waterfowl numbers are virtually nil, with the exception of a few Mountain Duck.

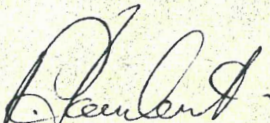
Lake Gundaring reserve is dry.

Dumbleyung Lake Reserve is very low, possibly less than one metre with sand bar formations across the lake forming many islands. Birdlife numbers on the lake are very low although the Coblinine River which enters Dumbleyung from the east is supporting high concentrations of Mountain Duck and Grey Teal. Swan and Black Duck are also found here but in moderate numbers. The Coblinine is holding water only for a few hundred metre stretch from the mouth upstream.

Several Pelicans were reported to have rested on a fresh water spring near Mr. H. Hall's property South Dargin before Christmas. It is believed that these birds had travelled from Lake Eyre. After resting and feeding the birds moved on.

The upper reaches of the Avon River is mostly dry and is reduced to a series of small pools. These pools are supporting low numbers of Black Duck and Grey Teal.

To date there has been no sign or reports of illegal taking of waterfowl this summer.

  
DISTRICT WILDLIFE OFFICER,  
January 11, 1978.

DEPARTMENT OF FISHERIES AND WILDLIFE  
WETLAND — WATERBIRD SURVEY SHEET

WETLAND	Avon River
LOCATION	North Teanite

INSPECTED BY	J. Lane + G. Pearson
INSPECTION DATE	20th Oct 78
TIME START	1010 hrs.
TIME FINISH	1155 hrs.

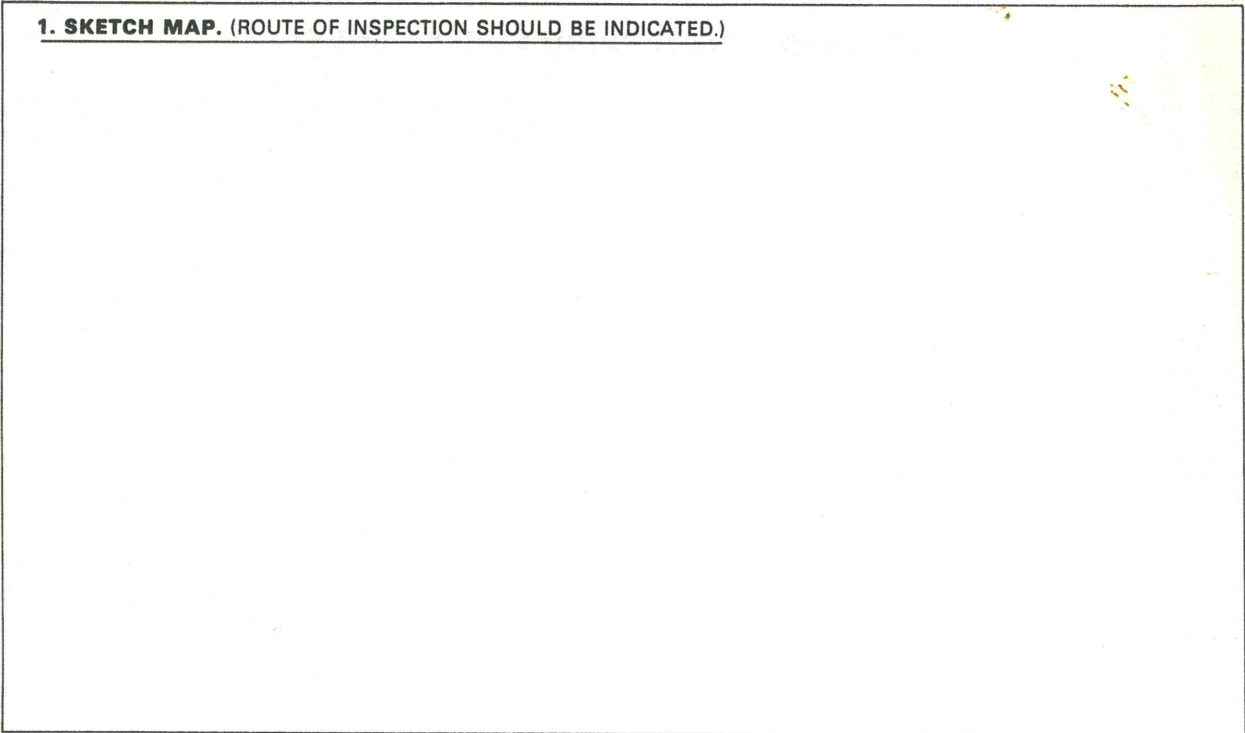
WATER LEVEL (dry, low, half full, high, full)	Water flowing over weir by approx 1cm + see photo.
DEPTH GAUGE READING (If Installed)	—
WATER SALINITY (If Tasted)	—

WEATHER CONDITIONS	
VISIBILITY	
BINOCULARS USED?	

BIRD SPECIES	LARGEST FLOCK SEEN	TOTAL NUMBER SEEN	ESTIMATED TOTAL POPULATION	COMMENTS (Nesting, Moulting etc?)
1 Little Pied Cormorant				Approx 18 immatures in nesting tree on island - young seen. See photo 50:4+5
2				Also seen along the river
3 Little Black Cormorant				Approx 19 in nesting tree on island (with 4 PCs) - see photo
4				Also seen along river
5				
6				Collected eggs 25-30 nests, mixed species, large young
7 Mute Swan	15	30	c 32-35	3 Mute swans seen on nests, apparently incubating
8				
9 Black Duck	84	c 90	c 110	2 Class II ducklings seen. The most abundant
10 <del>Grey Teal</del>	<del>84</del>	<del>90</del>	<del>100</del>	<del>duck species</del>
11 Grey Teal	Recorded			far less abundant than Black Duck.
12 Wood Duck	1	1	1	
13 Muscovy	1	1	1	
14 American Duck (Mallard descent)	2	2	2	
15 Coot	Recorded			One pair with 6 Class I chicks. 2 other groups of chicks seen
16				
17 Ring-necked Plover	1	1	< 10	
18 Blue-billed Plover	4+	4+	< 20	
19 White-faced Heron	recorded			
20 White-necked Heron	2	2	2	
21 King-billed Grebe	3			
22 Pelican	12	13	c 15	see photo 50:6+7.
23 Pied Shill	2	2	< 10	
24 Common Sandpiper	1	1	< 10	
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				

1	L. Hk. Pied Cormorant				Eggs 18 <del>immature</del> in nesting
2					tree on island - young seen. See plots 50:4+5
3					Also seen along the river
4	L. Hk. Black Cormorant				Eggs 19 in nesting tree on island (with 4 PCs)
5					Also seen along river - see plots
6	Estuaries	approx 25-30 nests			mixed species, large young
7	Mute Swan	15	30	c 32-35	3 Mute swans seen on nests,
8					apparently incubating
9	Black Duck	84	c 90	c 110	2 Class II ducklings seen. The most abundant
10	<del>Grey Duck</del>	<del>84</del>	<del>90</del>	<del>100</del>	duck species
11	Grey Teal	Recorded			far less abundant than Black Duck.
12	Wood Duck	1	1	1	
13	Muscovy	1	1	1	
14	Arctic Duck (Mallard derived)	2	2	2	
15	Coot	Recorded			One pair with 6 Class I chicks. 2 other groups of chicks seen
16					
17	Dusky Moorhen	1	1	< 10	
18	Black-tailed Nebra Hen	4+	4+	< 20	
19	White-faced Heron	recorded			
20	White-necked Heron	2	2	2	
21	Orange-headed Grebe	3			
22	Pelicans	12	13	< 15	see plots 50:6+7.
23	Pied Still	2	2	< 10	
24	Cormorant Scaup	1	1	< 10	
25					

**1. SKETCH MAP. (ROUTE OF INSPECTION SHOULD BE INDICATED.)**



2. WATER SAMPLES TAKEN? .....

IF YES, HOW MANY?.....Indicate Sampling Sites and Sample Identification on Sketch Map.

3. IN SITU MEASUREMENTS OF WATER QUALITY TAKEN? .....

SITE	WATER DEPTH AT SITE	DEPTH OF MEASUREMENTS (surface, bottom etc.)	SALINITY parts/thousand	TEMPERATURE °C	pH	
1						
2						
3						
4						
5						
6						

4. GENERAL COMMENTS ON WETLAND, BIRDS ETC.....

This area of permanent water created by the weir provides good habitat for waterbirds - nesting included.

Islands are vegetated with Casuarina obesa + Melaleuca sp.

River banks vegetated with B. rubra, C. obesa + Melaleuca.

Water was too shallow for us to reach the pipeline crossing just upstream from town.

12" punt used for through survey.

PLEASE FORWARD COMPLETED SHEETS TO: W.A. WILDLIFE RESEARCH CENTRE, P.O. BOX 51 WANNEROO 6065

SITE	WATER DEPTH AT SITE	DEPTH OF MEASUREMENTS (surface, bottom etc.)	SALINITY parts/thousand	TEMPERATURE °C	pH
1					
2					
3					
4					
5					
6					

4. GENERAL COMMENTS ON WETLAND, BIRDS ETC.....

This area of permanent water created by the weir provides good habitat for waterbirds - nesting included.

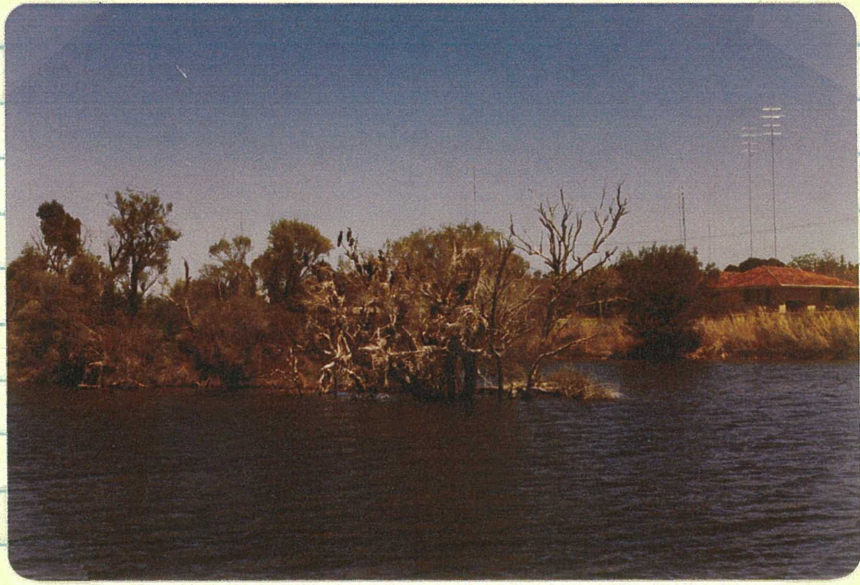
Islands are vegetated with Casuarina obesa + Melaleuca sp.

River banks vegetated with E. rudis, C. obesa - Melaleuca.

Water was too shallow for us to reach the pipeline crossing just upstream from town.

12" punt used for through survey.

PLEASE FORWARD COMPLETED SHEETS TO: W.A. WILDLIFE RESEARCH CENTRE, P.O. BOX 51 WANNEROO 6065



Down River - Northam Terrace . Fri 20th Oct 78  
Picking island of Little Red and Little Black Cormorants  
Film 50:4



Down River - Northam Terrace . Fri 20th Oct 78  
Film 50:5



Avon River - Pottam Tarnite . 20 H Oct 78  
Film 50:6



Avon River - Pottam Tarnite . 20 H Oct 78  
Film 50:7

DEPARTMENT OF FISHERIES AND WILDLIFE  
**WETLAND — WATERBIRD SURVEY SHEET**

WETLAND	Unnamed Pool in Avon River at "Pleas" - south of Lake Meers.
LOCATION	East side of road bridge (land under) Brothon 1:100,000, 341 189

INSPECTED BY	J. LANE.
INSPECTION DATE	28 FEB 79
TIME START	1555 hrs.
TIME FINISH	1615 hrs.

WATER LEVEL (dry, low, half full, high, full)	Low
DEPTH GAUGE READING (If Installed)	—
WATER SALINITY (If Tasted)	—

WEATHER CONDITIONS	—
VISIBILITY	Good
BINOCULARS USED?	Zeiss 8x30S.

	BIRD SPECIES	LARGEST FLOCK SEEN	TOTAL NUMBER SEEN	ESTIMATED TOTAL POPULATION	COMMENTS (Nesting, Moulting etc?)
1	Grey Teal	23	23	23	
2	Shelduck	3	3	3	
3	Gray-L. Gull	5	5	5	
4	White-faced Heron		6	6	
5					
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34					
35					



DEPARTMENT OF FISHERIES AND WILDLIFE  
**WETLAND — WATERBIRD SURVEY SHEET**

WETLAND	"Dwarlasking Pool" - Avon River
LOCATION	2.5 km SE of Kweeda. <i>Brookton 1:100,000, 422 138</i>

INSPECTED BY	J. LAWK.
INSPECTION DATE	28 FEB 79
TIME START	1615 hr
TIME FINISH	1630 hr

WATER LEVEL (dry, low, half full, high, full)	low
DEPTH GAUGE READING (If Installed)	—
WATER SALINITY (If Tasted)	—

WEATHER CONDITIONS	—
VISIBILITY	OK
BINOCULARS USED?	Zeni 8x30B.

	BIRD SPECIES	LARGEST FLOCK SEEN	TOTAL NUMBER SEEN	ESTIMATED TOTAL POPULATION	COMMENTS (Nesting, Moulting etc?)
1	Grey Teal	c140	c140	c140	
2	Black Duck	2	2	2	
3	White-faced Heron	1	1	1	
4	<hr/>				
6	Approx 500 m long and 35 m wide. Appears to be permanent.				
7	Has healthy fringe of <u>Casuarina obesa</u> , particularly on south side.				
8	Some E. <u>rubra</u> as well.				
9					
10					
11					
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31					
32					
33					
34					
35					

**1. SKETCH MAP. (ROUTE OF INSPECTION SHOULD BE INDICATED.)**



2. WATER SAMPLES TAKEN? .....

IF YES, HOW MANY?.....Indicate Sampling Sites and Sample Identification on Sketch Map.

3. IN SITU MEASUREMENTS OF WATER QUALITY TAKEN? .....

	SITE	WATER DEPTH AT SITE	DEPTH OF MEASUREMENTS (surface, bottom etc.)	SALINITY parts/thousand	TEMPERATURE °C	pH	
1							
2							
3							
4							
5							
6							

4. GENERAL COMMENTS ON WETLAND, BIRDS ETC. ....

**PLEASE FORWARD COMPLETED SHEETS TO: W.A. WILDLIFE RESEARCH CENTRE, P.O. BOX 51 WANNEROO 6085**

Box 44.

"Glen Avon,"

Northam.

Western Australia 6401

20th September '79

The Shire Clerk,  
NORTHAM. 6401  
W.A.

Dear Sir,

Ref: T.J.O'M/SL September 13th  
W.A. National Parks Assn/ Avon Descent

The concern of the W.A. National Parks and Reserves Association appears to me to be fully justified when judged by the conditions and events that occurred during the Avon Descent last July.

Undoubtedly there are problems in the conservation of the Avon River arising from the magnitude to which this race has grown. Prolonged and increased boating activities at other times is also a factor that must have increasing impact on the river if not controlled.

However, I must point out that under the more usual conditions of strong river flow in July in most years, the potential for damage is greatly minimized and with reasonable control need not be great.

The reason is that with strong river flow, normal in most years in June and July, water conditions are unstable, with constantly varying water levels and salinities, and reduced light penetration in the muddy water. Food supplies are low, and although wildlife populations are also low, they are in a period literally of adaptive hibernation as it were, quite well protected. Such conditions also ensure that other refuge areas exist in well supplied water sources nearby the river.

The situation is totally different on years of drought as occurred this year during June and July, and also in all years normally from the end of August to mid January.

River waters remain more or less static as to levels and salinities and light penetration being better in the cleaner waters, the whole annual breeding and rejuvenation cycles are underway and not lying dormant. When such conditions occur during winter it also indicates that all other refuge areas away from the river are poor, often non existent.

Prolonged and excessive disturbance under these conditions may well have long lasting effects on future viability of the Avon within the Shire as a functioning habitat and wildlife refuge, potentially effecting much of the water based wildlife of the whole district.

...../2

I would therefore suggest that there is a case for restricting all forms of large organised boating activities, not only power boats, after the beginning of September and over summer on all years, also over winter on drought years.

If organizers of such events will not recognize and respect these obvious natural disabilities of the Avon as a recreational boating area, then there is a strong case for prohibiting all forms of organised boating events. Constant usage even by large numbers of canoeists poses future problems in the confined river waters of spring and summer.

Concerning specific problems during the Avon Descent last July they seem to fall into two separate issues. (1) Boat problems (2) Spectator problems.

(1). Boat Problems: Assuming that the organisers must find it difficult to forecast well in advance potential river conditions. I suggest that if the race must be held under low water conditions and is permitted to take place, the following procedure is adopted. That the decision should be made at least a fortnight before the event and the movement of boats through the Northam and Toodyay Shire areas at least should be a once only movement confined to race day. In the period of the fortnight before the event no trial runs should be permitted. Such trial runs by would be competitors places excessive stress on the river wildlife under low water conditions, and is increasing.

(2) Spectator problems: These must surely be the responsibility of the organisers. The situation at the Katrine Bridge last year was chaotic, even more so it would appear near the overnight camp in the Toodyay Shire. I can only suggest that spectators be prohibited from entering the river channel and private land except where designated. If this cannot be rigidly carried out and enforced then the situation is already out of hand and good grounds exist for banning the race altogether.

To summarise: I consider that quite extensive usage of the river by boating enthusiasts of all small craft, small power boats included, is not seriously injurious to the river ecosystem when the river is strongly flowing and up to the end of August. At all other times from early September onwards and on all droughty years every effort to control and limit such usage is justified.

Yours sincerely,

J.R.Masters

9th Oct 1979.



Not grazed.

79:3 Bank of Avon River - J. Meston's property. LPC + LBC, nesting in E-rudis overhanging water

See field notebook for full survey details.



Not grazed

79:4 Bank of Avon River - J. Meston property.  
9th Oct 1979



Grazed

79:5 Avon R. <sup>bank</sup> opposite J. Meston property  
9th Oct 1979



79:6 Avon River - Bank opposite J. Masters property.  
Cost nest 9 OCT 1979.



79:7 Avon River ~~egg~~ - bank of  
J. Masters property - Cost nest.  
9 OCT 79.

RECORDS & OBSERVATIONS OF AVON RIVER FLOW

AS OBSERVED AT 'GLEN AVON', NORTHAM

1926-1979

J.R. MASTERS

*Supplied to  
(Peter Hapke) on request  
Northern Town Council*

Rainfall requirements for strong flow of Avon at end of July.

Totals of May, June, July rainfall (With consideration of wet or dry watershed in March/April and state of inland lake systems).

YEAR	STRONG FLOW POINTS	POOR FLOW POINTS	COMMENTS
1926	1300		Massive flooding
1927		800	Passable
1928	1200		Severe flooding
1929	1150		Good flow
1930	1000		Good flow
1931		900	Passable
1932	1150		Good Flow
1933	1030		Mostly May/June Muddy but low end July <del>at</del>
1934	1000		<del>March floods</del> March floods
1935		600	Very Low
1936		850	Very Low
1937		660	Extremely Low
1938		750	Extremely Low
1939	1200		First Strong flow for 5 years
1940		450	River didnot flow
1941		730	Extremely low
1942		780	Low (March flow) (Aug. passable)
1943		840	Low (March flow) (Aug. not passt)
1944		410	River didnot flow
1945	1480		Massive flooding
1946	1650		Massive flooding
1947	1030		Good Flow
1948		720	Fresh flowing late Mid March Aug good
1949		530	Extremely low
1950		770	Extremely low
1951		690	Low
1952		964	Low
1953	1120		Good Flow
1954		830	Fresh flow late start
1955	1000		Good flow - Feb. summer floods
1956	1500		Small flooding
1957	920		River muddy but low in July
1958	1480		Flooding end of July
1959		725	Passable mid August
1960	1420		Flooding end July
1961		690	Low
1962	1070		Good Flow
1963	1520		Flooding end July
1964	1560		Massive flooding
1965	1070		Strong flow
1966	890		Good flow end July
1967	1550		Flooding end July
1968	1190		Flooding end July

Only 1 year 1939 in this period was river in reasonable flow

7 years of extre- This period most consistent flow since 1915-1934  
mely high flow greatest since 1915-1926 period

1969		660	Almost stopped flowing end July
1970		970	Low
1971		550	Very Low (flow strong end of Sep)
1972		700	Very Low (flow good end of Aug few days)
1973	1200		Strong flow
1974	1300		Flooding end July
1975	1050		Flooding end July
1976		510	Very Low (flow fair mid Aug for few days)
1977		500	Very Low (flow good mid Aug)
1978	1120		Strong flow end July
1979		710	Very low (moderate flow late Aug for a few days)

ANALYSIS

For period 1955-1968 (14 years) only two years 1959 & 1961 had small flows at end of July. 1959 was quite passable at end August but 1961 remained low.

For period 1969-1979 (11 years) only four years had good flows 1973-1975 and 1978, five years 1971-1972-1976-1977 & 1979 had passable flows from mid August to mid September.

For period 1935-1944 (10 years) only one year 1939 had high flow in July with no relief later in August/September for all other years. This period had the least flow of the Avon recorded since 1884 as indicated from rainfall records and certainly for the 1926-1979 records.

It can be expected that at least 1/3 of all years will have very low water at the end of July requiring some restriction of usage.

There is a pronounced tendency for extended periods of successive years of both high and low water flow. This pattern of "cycles" quite clearly evident in rainfall records since 1884 each long cycle apparently passing through all extremes over a period of approximately 35-40 years. There is no indication whatever that significant periods of strong flow occur in August regularly unless strong flows have already occurred in the June or July preceding.

The best time for river flow is the last weekend in July.

*Handwritten notes at the top of the page, including "The notes of meeting completed" and "List of individuals on back of booklet".*

**QUESTIONS TO BE ASKED AT AVON RIVER PROTECTION COMMITTEE MEETING**

**ON FEBRUARY 5TH 1980.**

*Chairman: Mr. B. G. Thomson  
Avon River Council*

**1. REASONS FOR HOLDING AVON DESCENT**

- (a) Social, educational, economic, shooting, kite flying, people occupied.
  - (b) Advantages or disadvantages to whom. Promotion of descent (Northam)
- ENVIRONMENTAL ADVANTAGES AND DISADVANTAGES**

*Extensive handwritten notes on the left side of the page, including "The proposed by Avon River Council", "The descent committee", and "The proposed by Avon River Council".*

- (a) Problems associated with holding of events.
  - (b) Environmental damage, direct and indirect.
  - (c) Degree of suitability of any section of river under varying conditions of flow.
  - (d) How much use can river sustain and for what period?
  - (e) Why is the Northam Weir area not used extensively at other times?
- LEGAL AREAS**
- (a) Who is legally responsible for restoration of damage to private property, roads, buildings (e.g. Katrine Church)?
  - (b) Legal responsibility of private landowners in event of injury to a person on his property.

**5. OTHER RELATED AREAS**

- (a) Current situation as to legal control and rights over Avon River bed and foreshore. Is it P.W.D., Fisheries and Wildlife, Shires of Landowners?
- (b) Defining and co-ordination of the legal right.
- (c) Defining of high water mark.
- (d) Advisability of Waterways Commission Control - This already exists to Walyunga and is a statutory body funded entirely by State Government.
- (e) The advisability of English style National Park control or similar - a statutory body funded partly by central Government, partly by local Government and in some cases partly by private bodies and individuals.
- (f) The possibility of total Swan, Avon and Mortlock River basin control.

*Handwritten notes on the left side of the page, including "The proposed by Avon River Council" and "The proposed by Avon River Council".*

*Handwritten notes at the bottom of the page, including "No motions or resolutions taken at meeting" and "The proposed by Avon River Council".*

Representatives Present:-

Shire of Northam:- Councillors Doug Morgan & Bert Doyellin & Parish Council Clerk Len Hogg

Shire of Inyanga:- Councillors Jim Murray & Jim Page and Shire Clerk Brian Thomas.

Shire of Northam (and also  
Lionel Vincent Committee):- Councillors Jim Price and Town Clerk Justin Boman.

None at meeting joined the Shire Protection Committee.

Others by invitation.

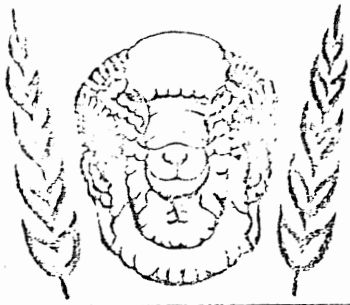
Mrs Penny Huxsey (also National Parks Board)  
Mrs N. J. Madden & Mr Madden  
(President) :- W.A. National Parks Association.

Mr. Colin J. Murray :- Dept of Conservation & Environment.

Leo Ross from :- W.A. Canoeists Association.

Mr. Jim R. Masters :- Participants of Northam Shire (including some non-Res.)  
(also River Committee of W.A. Wildlife Authority) general protection of water on the Shire River in Northam and Inyanga Shires when called upon.

Mrs Huxsey & J. R. Masters indicated at meeting at start that any views they expressed at the meeting were their own and not necessarily those of statutory authorities of which they were representatives also as observers.



# SHIRE OF NORTHAM

55 FITZGERALD STREET, NORTHAM, 6401, TEL 221214 - 222369

Mr. J.R. Masters,  
"Glen Avon",  
Toodyay Road,  
NORTHAM, W.A. 6401.

Our ref: TJO'M:bo's A5/1

Dear Sir,

Re : Avon Descent

I enclose a report on the 1979 Avon Descent, by Mr. C.J. Murray of the Department of Conservation and Environment, for your information.

If there are any sections of the report on which you would like to comment, Council would be pleased to receive them.

Yours faithfully,

T.J. O'MEARA,  
SHIRE CLERK.

10th January, 1980.

Encl.

*Evidence of nesting birds July 1979  
already had been given Shire  
No reply sent this letter  
J.R.M.  
Birds were:- Grey Fantail, Mountain Duck (which 15/1/80  
on the bank side  
at the dam & both Red Cormorants*

SURVEY OF LAND OWNERS ALONG THE AVON RIVER

SURVEY QUESTIONS

- (a) Do you hold a Crown Grant to your property giving you ownership of the actual land in the river?
- (b) What damage, if any, is done to your land or assets on the land during the Avon Descent or as a result of the Avon Descent and what is the direct cause of that damage?
- (c) What damage have you observed to the river and its environs by the Avon Descent or as a result of the Avon Descent and what is the direct cause of that damage?
- (d) What is your personal opinion of the event itself and do you think it should continue?

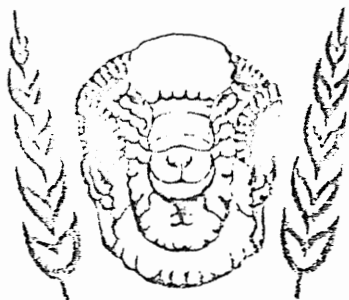
REPLIES RECEIVED

- |                     |     |   |
|---------------------|-----|---|
| <u>J.R. Masters</u> | (a) | Yes   |
|                     | (b) | Very little disturbance to livestock, etc.  |
|                     | (c) | Some  |
|                     | (d) | Yes. Continue for the present under restriction. <u>Full letter attached.</u>   |
| <u>R.B. Smart</u>   | (a) | Yes   |
|                     | (b) | None  |
|                     | (c) | Not that I know of.   |
|                     | (d) | Yes. Continue under strict controls.  |
| <u>E.L. Viveash</u> | (a) | Yes - some titles   |
|                     | (b) | None  |
|                     | (c) | Have observed no damage.  |
|                     | (d) | Should be continued, however, one of the pillars on the Katrine Church steps was broken this year. Toilet facilities important. |
| <u>T.M. Seymour</u> | (a) | Yes   |
|                     | (b) | Damage is small.  |
|                     | (c) | Mainly driving, walking and litter.   |
|                     | (d) | The event should continue but with better control.  |
| <u>C.R. Host</u>    | (a) | No  |
|                     | (b) | None  |
|                     | (c) | None  |
|                     | (d) | Should be restricted to canoes only not power boats.  |

The following were included in the survey, but no reply was received :-

W.J. Morgan and Son  
B.R. & K.M. Pozzi (*Attercliffe courts.*)  
E.G. Barrett-Lennard (*Attercliffe*)  
R.L. Lefroy (*Attercliffe*)  
J.B., R.A., R.C. & E.M. Cooke

Some of the above may not have land which actually adjoins the river.



# SHIRE OF NORTHAM

55 FITZGERALD STREET, NORTHAM, 6401. TEL 221214 - 222369

Mr. J.R. Masters,  
Box 44,  
"Glen Avon",  
NORTHAM, W.A. 6401.

Our ref: TJO'M:bo's

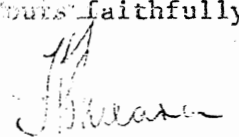
Dear Sir,

Re : W.A. National Parks Assn/Avon Descent

Your comments on the Avon River Ecosystem were very favourably received by Council.

Council intends to call a meeting of neighbouring authorities to discuss the matter further. I will advise you when a meeting date has been set, so that you may attend.

Yours faithfully,

  
T.J. O'MEARA,  
SHIRE CLERK.

16th October, 1979.

W.A. NATIONAL PARKS AND RESERVES ASSOCIATION INC.

C/- Conservation Council of W.A. Inc.  
537 Wellington Street,  
PERTH. W.A. 6000

17th August, 1979

(AS/1)

T/P.

The President,,  
Northam Shire Council,  
NORTHAM. W.A. 6401

Dear Sir,

At our meeting on 15th August, members of the W.A. National Parks and Reserves Association reported on the destruction of riverside vegetation during the recent Avon Descent, particularly at the overnight campsites.

We are very concerned about many aspects of this activity, and deplore the effect it has on the river system.

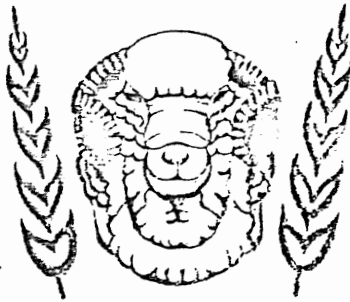
National Parks and reserves are designated so in order to protect small sections of our heritage, and it seems illogical that a boating activity such as the Avon Descent should be allowed to create such havoc in these areas. Our fragile ecosystems can not cope with the influx of the number of spectators following power boat racing, which in itself creates many problems to flora and fauna.

We ask that consideration be given to banning power boats on this inland waterway.

Yours sincerely,

*M. J. Madden*

M. J. Madden (Mrs.)  
President



# SHIRE OF NORTHAM

All communi-  
be addressed  
Shire Clerk.



1829 - 1979

55 FITZGERALD STREET, NORTHAM, 6401. TEL 221214 - 222369

Mr. J. Masters  
Toodyay Road  
NORTHAM W A 6401

Our ref: TJO'M:SL  
S1/1

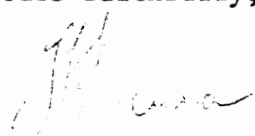
September 13th, 1979.

Dear Sir,

I enclose a copy of a letter from the W.A. National Parks and Reserves Association Inc. recently received by Council.

Your comments on the matters raised in the letter would be appreciated.

Yours faithfully,

  
T.J. O'MEARA.  
SHIRE CLERK.

Enclosure:

-2-

I would therefore suggest that there is a case for restricting all forms of large organised boating activities, not only power boats, after the beginning of September and over summer on all years, also over winter on drought years.

If organizers of such events will not recognize and respect these obvious natural disabilities of the Avon as a recreational boating area, then there is a strong case for prohibiting all forms of <sup>Large</sup> organised boating events. Constant usage even by large numbers of canoeists poses future problems in the confined river waters of spring and summer.

Concerning specific problems during the Avon Descent last July they seem to fall into two separate issues. (1) Boat problems (2) Spectator problems.

(1). Boat Problems: Assuming that the organisers must find it difficult to forecast well in advance potential river conditions. I suggest that if the race must be held under low water conditions and is permitted to take place, the following procedure is adopted. That the decision should be made at least a fortnight before the event and the movement of boats through the Northam and Toodyay Shire areas at least, should be a once only movement confined to race day. In the period of the fortnight before the event no trial runs should be permitted. Such trial runs by would be competitors places excessive stress on the river wildlife under low water conditions, and is increasing.

(2) Spectator problems: These must surely be the responsibility of the organisers. The situation at the Katrine Bridge last year was chaotic, even more so it would appear near the overnight camp in the Toodyay Shire. I can only suggest that spectators be prohibited from entering the river channel and private land except where designated. If this cannot be rigidly carried out and enforced then the situation is already out of hand and good grounds exist for banning the race altogether.

To summarise: I consider that quite extensive usage of the river by boating enthusiasts of all small craft, small power boats included, is not seriously injurious to the river ecosystem when the river is strongly flowing and up to the end of August. At all other times from early September onwards and on all droughty years every effort to control and limit such usage is justified.

Yours sincerely,

J.R.Masters



Alton River  
Near Marlton

31-3-80

F# ~~14~~ 15

Neg 14



Neg 13



Neg N° 12

# SHIRE OF NORTHAM



55 Fitzgerald Street,  
NORTHAM, W.A. 6401.  
(096) 221214 - 222369

All communications  
to be addressed to  
the Shire Clerk.

Director,  
Department of Fisheries & Wildlife,,  
108 Adelaide Terrace,  
PERTH, 6000.

Our ref: AJM:bo's A5/1

Dear Sir,

Concern has been expressed over damage caused to the habitat of bird-life living on the Avon River.

To enable public use of the river to be discussed, a meeting between landowners and public authorities is to be held in the Shire of Northam Council Chambers on Monday 9th, August, 1982, at 1.30 p.m.

It is important that your department participate in discussions. I therefore, extend a cordial invitation for a representative, who has experience in waterbird research and management and a knowledge of inland river and pool situations, to attend that meeting.

Yours faithfully,

A.J. MIDDLETON,  
SHIRE CLERK.

22nd July, 1982.

R.S.V.P. <sup>done by phone 29/7</sup> 1st August, 1982. \*

D in

Mr Lane Urgent

Now Thurs 12th August -

Ray Jim Masters - Northam Shire Council  
wants to know who can exercise control  
over recreational use of the river.

Jim Masters has good data to show  
adverse effects of trawling for brown  
descent on the birdlife.

Jim. not opposed to the actual  
event itself - Only the trawling  
and (perhaps?) recreational paddling  
after the event.

2/8/82

# SHIRE OF NORTHAM



55 Fitzgerald Street,  
NORTHAM, W.A. 6401.  
(096) 221214 - 222369

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108 Adelaide Terrace,  
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SHIRE CLERK.

22nd July, 1982.

R.S.V.P. <sup>done by phone 29/7</sup> 1st August, 1982. \*

D in

Mr Lane Urgent

Now Thurs 12th August -

Ray Jim Mesters - Northam Shire council  
wants to know who can exercise control  
over recreational use of the river.

Jim Mesters has good data to show  
adverse effects of tramping for horse  
descent on the birdlife.

Jim not opposed to the actual  
event itself - Only the tramping  
and (perhaps?) recreational paddling  
after the event.

2/8/82

# SHIRE OF NORTHAM



55 Fitzgerald Street,  
NORTHAM, W.A. 6401.  
(096) 221214 — 222369

All communications  
to be addressed to  
the Shire Clerk.

Director,  
Department of Fisheries & Wildlife,  
108 Adelaide Terrace,  
PERTH, 6000.

Our ref: AJM:bo's A5/1

Dear Sir,

Re : Habitat of birdlife living on the Avon River

Further to my letter of 22nd July, 1982, please note that the meeting will now be held on Thursday 12th August, 1982. The appointed time is 1.30 p.m.

Yours faithfully,

*per B O'Shannessy*

A.J. MIDDLETON,  
SHIRE CLERK.

26th July, 1982.

~~A.A. [unclear]~~  
and name

URGENT

Don

Mgmt Officer - Avon Valley

Arrangements are

We meet Tim Sharp at Bookies Board  
at corner of Gt. Northern Hwy and  
Paddy Ave at 0800 hrs on  
Wed 4th (near Wed) in our  
vehicle (AAB's Toyota). Spend  
all day going at least as far as  
Cobblers Pool. Take cut lunch  
with us.

7.15 at WRC.

Me

Primo  
Billy  
Tea  
Milk sugar  
Coffee

30/7

# A rapid success after 10 years

In September, 1972, four men battled their way down the Avon River in an effort to find if it were possible for a power boat to complete the journey from Northam to Perth.

The four men, John Izzard, Gerry Post, Rob Leslie and Ron Bairstow had volunteered for the formidable task set by the Northam Tourist Committee.

In a boat sponsored by Graincol, they had to battle their way almost every foot of the river, over fallen trees, down rushing waterfalls and through turbulent sections of blinding, choking foam.

It took them four days to reach Perth, and thus was the Avon Descent born.

The inaugural Avon Descent was held by the Northam Tourist Committee in 1973, and for the 54 teams entered it must have seemed a huge journey.

The race began from the Northam Weir, and those who experienced the start will never forget it.

## Collapse

The afternoon before the race a section of the weir collapsed, and as the competitors came under the starter's gun, they were shot over the weir like a champagne cork out of a bottle.

From there they plunged into the unknown.

The river was high, but the competitors had to negotiate bone jarring rapids, dense thickets of li-trees, and above all the racing, icy cold water.

Only 23 of the 54 starters finished the event, behind them a long trail of wrecked boats and exhausted crews.

So fast were the leaders travelling they outran the race officials and finished the journey in less than one day.

1974, and the thrill of conquering the Avon River had really caught on, and the entries jumped to 139.

Again the river was high and the crews plunged into the Avon Valley in an attempt to break the race record.

## Low level

Only 63 teams survived along with 18 single canoe teams crossing the finish line.

Then came the end of high rivers.

In 1975 the river level was dangerously low, and the race had to be started down river at Katrine Bridge.

After slogging their way through to Posselt's Ford, the overnight stop, the competitors went to sleep with the prospect of another harrowing day to follow.

However, providence smiles on the brave, and an inch of rain overnight set the river roaring through the steep hills of the Avon Valley.

The crews revelled in the conditions and spectators applauded as they slammed their way through, over, or under, the many obstacles.

1976 and 1977 were both extremely dry years, and the race had to be started at the midway point, Posselt's Ford.

In 1977 the entry list had grown to 351, but once again the river had

the upper hand, and only 94 crews managed to stumble over the finish line.

The Avon Descent in 1978 saw a return to high water, and some very good times were set, but in the following year the water level dropped again and one section of the race had to be abandoned.

1980 saw the emergence of the Whitney Brothers as the race favorites and they did not let their supporters down as they gunned their little craft through the low water to the waiting crowd at the Causeway.

Last year the organisers decided on a new finish line, the Garrett Road Bridge in Bayswater, and a large crowd in a holiday mood gathered to welcome the finishing boats. Russell Wilson and Steve Palmer

won the race in a record 3 hours 24 minutes.

By now shooting the Avon had become a science, and new styles of boats began to appear, specially modified to suit the arduous conditions.

This year will see the 10th anniversary of the Avon Descent and already there have been very good entries.

The eastern states are well represented in the list of competitors, and there is even a crew from Darwin who are about to tackle the Avon River for the first time.

To mark the anniversary there will be special entertainment, both on

the evening before the race and at the overnight stop.

On the Friday evening before the race the camping area will be at Burwood Park, Northam's trotting ground.

The Saturday night stop will be at Boots Camp, near Cobbler Pool.

The entertainment will feature Country Music and there will be full catering facilities at both places.

Everything is in readiness for next week's race.

NEXT weekend a record number of entries will take to the water for the tenth annual Avon Descent, the longest white water race in the Southern Hemisphere. When entries closed on Wednesday there were 330 starters, a record field of both

power boats and canoes, and officials say they are sure to face an Avon River in full flood.

The Avon Descent is growing in stature year by year, and today LESTER GLENISTER reviews the history of the race.

