

## A SURVEY OF TERRESTRIAL VERTEBRATES IN THE CARNARVON REGION, W.A.

By M. G. BROOKER and A. J. ESTBERGS, Division of Wildlife Research,  
C.S.I.R.O., P.O. Box 84, Lyneham, A.C.T. 2602

### INTRODUCTION

This paper records the terrestrial vertebrates observed during a study of the Wedge-tailed Eagle in the Carnarvon region of Western Australia.

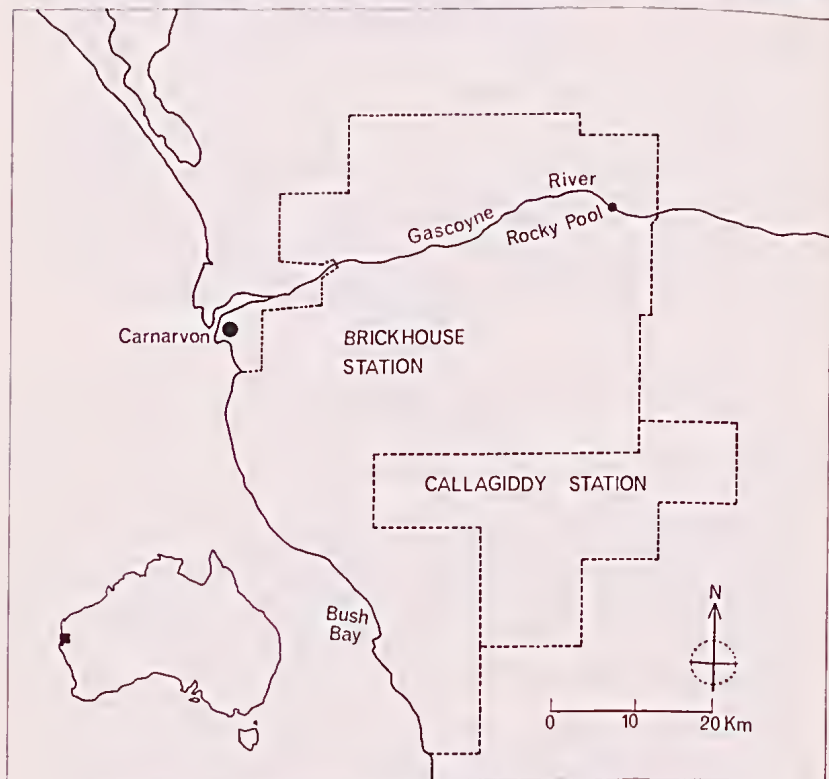


Figure 1.—Map showing location of Callagiddy Station.

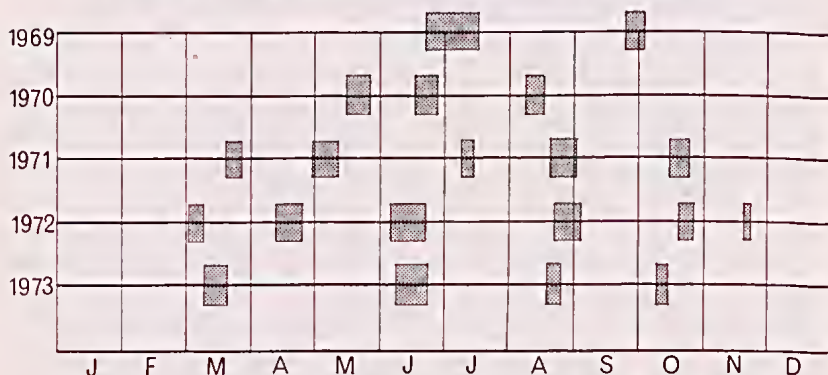


Figure 2.—Timetable of visits to Carnarvon area, 1969-73.

Most of the data were obtained on Callagiddy, a sheep station of 650 km<sup>2</sup>, situated 40 km south-east of Carnarvon. Some records were made on neighbouring Brickhouse station. (See Fig. 1).

The observations were made during the five year period 1969 to 1973; the majority of visits being in winter and spring. No visits were made during summer. (see Fig. 2).

### THE ENVIRONMENT

**Topography and soil:** Callagiddy is mostly flat with some high north-south sand ridges. There are numerous claypans and swamps which hold water after heavy rain. The soil is predominantly coarse red sand.

**Land use:** The station has run sheep for most of this century with a few cattle and horses. Water for livestock is provided by a system of windmills, bore drains and dams. The underground water has a high salinity.

**Rainfall:** The area has a low but reliable winter rainfall and a low unreliable summer rainfall resulting from cyclone activity. The monthly medians for Carnarvon and the monthly rainfall for Callagiddy homestead 1969-1973 are shown in Fig. 3.

**Vegetation:** *Acacia* scrub of various densities and heights dominates

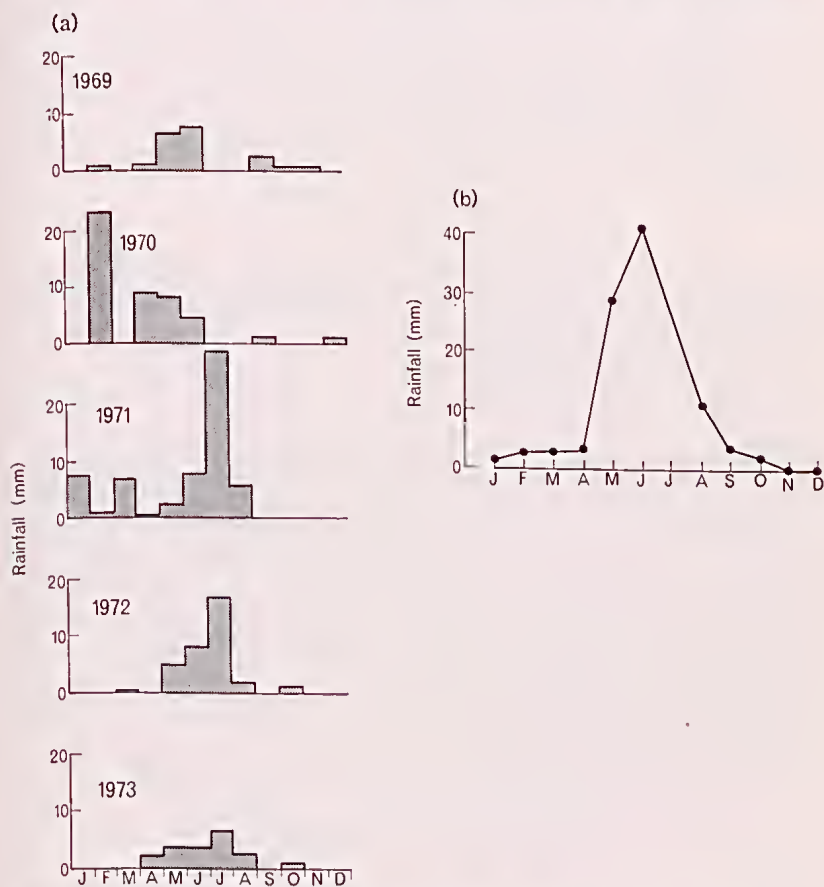


Figure 3.—(a) Monthly rainfall for Callagiddy 1969-73. (b) Monthly median rainfall for Carnarvon (66 years).

the vegetation. Summer rainfall results in a ground cover of Blow-away Grass (*Aristida browniana*) while winter rain is followed by the germination of Compositae e.g. *Helipterum splendidum*, *Cephalopterum drummondii*, *Brachycome cheilcarpa*. For the purpose of this paper, the vegetation of Callagiddy has been classed into six habitat types, mainly on the basis of the floristic composition of the tree and shrub components.

1. Sand-ridge: Dominated by a tall (to 10 m) single-stemmed form of *Acacia quadrimarginae* known locally as Gidgie. The understory is composed predominantly of young Gidgie with *Eremophila maitlandii*, *Stylobasium spathulatum*, *Adriana tomentosa* and occasional *Solanum* spp. and other *Eremophila* species. The edges of sand ridges are usually lined with dense thickets of Sandhill Wattle (*Acacia schlerosperma*) and Curara (*Acacia tetragonophylla*).

2. Dense acacia scrub: Basically a mosaic of large areas of Wanya (*Acacia linophylla*), Snakewood (*A. culbertsonii*) and Jam, the multi-stemmed form of *A. quadrimarginea*. Sandhill Wattle and Curara are found as a lower layer throughout this formation together with at least 21 other shrub species.

3. Coastal flats: Open habitat of Bluebush (*Kochia* sp.) with occasional clumps of Snakewood, Curara, and Standback (*Acacia* sp.).

4. Inland flats: Open habitat with large areas of bare ground. Clumps of *Eremophila fraseri* and scattered Myall (*Acacia* sp.), Prickly Wattle (*A. victoriae*), Curara, *Cassia* spp. and various *Eremophila* species.

5. Swamps: This habitat is dominated by Coolibahs (*Eucalyptus microtheca*) with *Teucrium racemosum* and *Melaleuca uncinata* in lower areas.

6. Bore drain: Along the bore-drains are dense, tall (to 6 m) stands of Prickly Wattle which are often heavily parasitised by the mistletoe *Lysiana casuarinae*.

## METHODS

Plants: Material collected from most trees and shrubs and some of the grasses and herbs on Callagiddy were identified by the staff of the Western Australian Herbarium. *Acacia* specimens were identified by Dr. M. D. Tindale of the National Herbarium, Sydney. The collection is in the CSIRO Herbarium, Canberra.

Frogs and Reptiles: Specimens collected were identified by Dr. G. M. Storr of the Western Australian Museum where most of the specimens are housed.

Birds: During each visit, an attempt was made to record all birds present on Callagiddy. Although information on density, habitat preference and breeding was not collected systematically, some indication of status and habitat preference is shown for species other than water-birds. Status classes used are S—sedentary; PN—partial nomad (always present but numbers fluctuate); TN—true nomad (always present in good season and always rare or absent in dry season); M—migrant (absent autumn, present late winter-spring, regardless of the nature of the season); V—vagrant; SU—status unknown. Habitat preference is given by the number of the habitat as defined in Vegetation above.

Most of the breeding records have been forwarded to the RAOU Nest Record Scheme. Birds are listed mainly according to the *Index of Australian Bird Names* (CSIRO).

Mammals: Sightings were recorded and traps for small mammals were set during two visits. No special effort was made to collect bats.

## LIST OF VERTEBRATES

### Amphibia

*Litoria rubella*  
*Neobatrachus centralis*  
*N. wilsmorei*

**Reptilia****Gekkonidae**

*Diplodactylus pulcher*  
*D. spinigerus*  
*D. squarrosus*  
*Gehyra variegata*  
*Nephruirus levis occidentalis*

**Pygopodidae**

*Pygopus nigriceps*

**Agamidae**

*Amphibolurus inermis*  
*A. maculatus*  
*A. minor*  
*A. reticulatus*  
*A. scutulatus*  
*Moloch horridus*

**Scincidae**

*Ctenotus minutus*  
*C. pantherinus*  
*Egernia depressa*  
*E. stokesi*  
*Lerista muelleri*  
*L. nicholli*  
*Menetia greyii*  
*Tiliqua occipitalis*  
*Trachysaurus rugosus*

**Varanidae**

*Varanus caudolineatus*  
*V. eremius*  
*V. gouldii*

**Typhlopidae**

*Typhlina australis*  
*T. nigroterminata*

**Boidae**

*Liasis childreni*

**Elapidae**

*Demansia nuchalis*  
*D. modesta*  
*D. psammophis reticulata*  
*Denisonia monachus*

**AVES**

*Dromaius novaehollandiae* (Emu). Common in all habitats and breeding recorded each year except 1973. Earliest record of eggs (seven) on 8 May 1971. S all.

*Podiceps polocephalus* (Hoary-headed Grebe). Present August and October 1971 and breeding recorded August 1971.

*Podiceps novaehollandiae* (Little Grebe). A pair in flooded area August 1971.

*Ardea pacifica* (White-necked Heron). Seen occasionally on dams.

*A. novaehollandiae* (White-faced Heron). Not common but one or two birds seen on dams and bore drains during most visits. Three nests found 26 August 1972 near bore drain on Brickhouse contained respectively four eggs; one egg three chicks; and five chicks.

*Threskiornis spinicollis* (Straw-necked Ibis). Recorded only in May to August and none in 1973.

*Anas gibberifrons* (Grey Teal). Recorded June 1970, July to October 1971 and August 1972. Nest with eight eggs found in August 1971.

*A. rhynchotis* (Shoveller). Recorded in August 1971.

*Malacorhynchus membranaceus* (Pink-eared Duck). Pair observed August 1972.

*Cheonetta jubata* (Wood Duck). Recorded during periods of local flooding (May and June 1971 and August 1972).

*Milvus migrans* (Fork-tailed Kite). One recorded June 1970. V  
*Lophoictinia isura* (Square-tailed Kite). One sighting in June 1972. V  
*Haliaeetus indus* (Red-backed Sea-Eagle). Seen on the western edge of Callagiddy during June 1972 and August 1973. V

*H. sphenurus* (Whistling Kite). Seen during most winter visits. No records for March, October or November. SU all

*Accipiter fasciatus* (Australian Goshawk). Recorded all years except 1973. S All

*A. cirrocephalus* (Collared Sparrowhawk). Recorded occasionally usually along bore drains. S All

*Aquila audax* (Wedge-tailed Eagle). Common in all habitats on Callagiddy. Papers on a detailed study of this species are in preparation. S All

*Hieraaetus morphnoides* (Little Eagle). Seen during most visits but never common. S All

*Circus assimilis* (Spotted Harrier). Common during 1971, seen in August 1970 and 1972 and not recorded 1969 or 1973. An estimated six pairs present on Callagiddy in August, 1970. TN All

*C. approximans* (Swamp Harrier). One bird seen on Brickhouse October 1972.

*Falco longipennis* (Little Falcon). Seen occasionally in all years except 1969 and 1973. SU All

*F. berigora* (Brown Falcon). Common in all habitats. A flock of 13 recorded at 17.30 hours on 23 June 1970. Of six nests inspected in late August, five contained eggs (1, 2, 3, 3, 3) and one contained three large chicks. S All

*F. cenchroides* (Nankeen Kestrel). Numerous in all habitats with an apparent peak in numbers during March 1973. Breeding recorded August to October each year and details of nests inspected in late August 1971-73 shown in Table 1 below.

TABLE 1.—SUMMARY OF BREEDING DATA FOR NANKEEN KESTREL NESTS INSPECTED LATE AUGUST, 1971-73 ON CALLAGIDDY.

Date	Stage of breeding				
	Nest ready		Eggs present	Chicks present	
	No. nests	No. nests	Numbers of eggs	No. nests	No. chicks
23-29 August 1971	1	5	2,3,3,4,4	2	2,3
26 August-1 September 1972	1	13	1,2,3,4,4,4,4,4,5,5,5,5,6	0	—
20 August 1973	0	3	1,1,1	0	—

All were in old crow nests except one in a hollow Coolibah. One nest contained two downy chicks on 30 August 1971 and four fresh eggs on 17 October 1971. S All

*Turnix velox* (Little Quail). Common in grassy area (*Aristida*) in some years (June-October 1970, March-November 1972) and rare in other years (one record for 1971, none for 1973). Nests with eggs found August and October 1971 and September 1972. TN 3, 4, 5

*Gallinula ventralis* (Black-tailed Native-hen). Large numbers present around swamps in June and August 1972 and some still present in October. Recently-vacated nests found in cane grass swamp on Brickhouse 27 August.

*Fulica atra* (Coot). A pair on flooded area, August 1971.

*Eupodotis australis* (Bustard). Rare—an average of one observed each year. SU all

*Vanellus tricolor* (Banded Plover). Recorded during all visits but numbers present varied. (Only one pair observed during seven days in August

1970, "numerous" in May 1971). Nest with four eggs, July 1971; runners seen August 1972. PN 3, 4, 5

*Erythrogonys ciuctus* (Red-kneed Dotterel). One recorded August 1972.

*Charadrius melanops* (Black-fronted Dotterel). Present August and October 1971 and August 1972.

*Peltohyas australis* (Australian Dotterel). Recorded June 1972. V

*Himantopus himantopus* (White-headed Stilt). One recorded June 1972.

*Recurvirostra uovaehollandiae* (Red-necked Avocet). Present August 1972.

*Tringa hypoleucos* (Common Sandpiper). One seen August 1972.

*Stiltia isabella* (Australian Pratincole). A flock was recorded on Brickhouse, August 1972.

*Chlidonias hybrida* (Whiskered Tern). Seen occasionally on western edge of Callagiddy.

*Columba livia* (Domestic Pigeon). Seen occasionally at Callagiddy homestead. V

*Geopelia striata* (Peaceful Dove). Not recorded on Callagiddy although common on Gascoyne River at Carnarvon and Roeky Pool.

*G. cuveata* (Diamond Dove). Not common and usually found in Coolibah habitat. Breeding recorded August 1970. S5

*Plaps chalconotus* (Common Bronzewing). Rare with only two records (June 1972 and August 1973), in sandridge habitat. On both occasions, the bird seen was incubating. S1

*Ocyphaps lophotes* (Crested Pigeon). One of most common species and found in all habitats. Breeding recorded August 1970. S All

*Cacatua roseicapilla* (Galah). Numerous in all habitats and breeding recorded each year from August to November. Of 13 nests inspected 20-23 August 1971, four were lined, one contained two eggs, five three eggs, and three four eggs. S All

*C. sanguinea* (Little Corella). One record for Callagiddy (June 1970), although this species common in Carnarvon. V

*Nymphicus hollandicus* (Cockatiel). Present during good seasons (May and June 1970, July and October 1971 and August and October 1972). TN All

*Melopsittacus undulatus* (Budgerigah). Common in good seasons especially 1972 when present from March to November. No records for 1969 and only one for 1973 (August). Breeding noted August and October 1971. TN All

*Baruwardius zonarius* (Port Lincoln Parrot). Nomadic in this area—no records for 1969 and 1970, present March-June 1971-73. In each of the years when present, the previous summer had been dry suggesting a movement from the inland to the coast under these conditions. During March 1972, they appeared to be feeding exclusively on moth larvae (Brooker, 1973). SU 1, 2, 4, 5

*Psephotus varius* (Many-coloured Parrot). Common in all habitats and nests found in hollows in dead Gidgies and in vertical metal pipes (internal diameter = 90 mm) used as gate and sign posts. Eggs found August and early September with clutch of seven recorded September 1972. S All

*Neophema bourkii* (Bourke's Parrot). Present all years and usually seen in sandridge and thick Wanya habitats on the eastern end of Callagiddy. Two breeding records from same broken-off dead Gidge (four eggs, 31 August 1971 and three eggs, 1 September 1972). S 1, 2

*N. elegans* (Elegant Parrot). Recorded on coastal side of Callagiddy but not common (no records for 1969 or 1973). SU 2, 3

*Cuculus pallidus* (Pallid Cuckoo). Common from March to October in 1970, 1971 and 1972. Uncommon in dry years (1969 and 1973). PN All

*Chrysococcyx osculans* (Black-eared Cuckoo). Common during 1971 and seen occasionally during other years (March to October). PN All

*C. basalis* (Horsfield Bronze-Cuckoo). Seen all years but not as common as Black-eared Cuckoo. No March records. PN All

*Ninox novaeseelandiae* (Boobook Owl). Present all years. Appears to call more frequently during June. S 1, 5

*N. conniveus* (Barking Owl). Not seen but a prolonged bout of calling (reminiscent of the distress call of the domestic fowl) on the night of 7 July 1969 was attributed to this species. V

*Podargus strigoides* (Tawny Frogmouth). Seen occasionally. Three occupied nests found late August 1972—two contained one egg and one small chick and the other two fully-feathered chicks. One nest was in a Coolibah which also contained occupied nests of a Nankeen Kestrel and Little Crow. S. All

*Aegotheles cristatus* (Owlet-nightjar). Common in all habitats and heard calling March to October. The recorded breeding season was from July to October and clutch size three or four. Of seven birds disturbed during daylight in 1973, two were brown, one grey-brown and four grey. S All

*Caprimulgus guttatus* (Spotted Nightjar). Three records (May 1971, August 1972 and June 1973). S 1, 2

*Dacelo leachii* (Blue-winged Kookaburra). Present at Rocky Pool (see Figure 1), breeding observed October 1969.

*Halcyon pyrrhopygia* (Red-backed Kingfisher). Present during four visits (August 1969, May and June 1970 and August 1972). Breeding recorded August 1969. SU 5

*H. sancta* (Sacred Kingfisher). One recorded (June 1970). V

*Merops ornatus* (Rainbow Bec-eater). Not recorded on Callagiddy although common along Gascoyne River at Carnarvon (definite records during winter of 1970 (23 June), 1972 (also 23 June) and 1973 (June)).

*Mirafrja javanica* (Singing Bushlark). One recorded on eastern end Callagiddy, October 1972. V

*Cheramoeca leucosternum* (White-backed Swallow). Two records (June 1969 and 1970) on coastal side of Callagiddy. V

*Hirundo neoxena* (Welcome Swallow). Common at all mills, dams and bore drains. Breeding recorded June 1969 and August 1970. S 5

*Petrochelidon nigricans* (Tree-Martin). Common except in dry years (one record in each of 1969 and 1973). Nesting at Rocky Pool, October 1969. PN All

*Aulus novaeseelandiae* (Australian Pipit). Common. Breeding recorded June 1969, August and October 1971 and August 1972. S 3, 4, 5

*Coracina novaehollandiae* (Black-faced Cuckoo-shrike). Common in all habitats. Breeding observed August to November. An immature was seen assisting adult birds at nest containing two chicks October 1971. Large flocks of juveniles recorded on Callagiddy, June 1969. PN All

*Pteropodocys maxima* (Ground Cuckoo-shrike). Recorded June 1972. V

*Lalage sueurii* (White-winged Triller). Common all habitats June to October. No record in March and only one in May (1970). Occupied nests found August 1970 and October 1971 and August 1972. Nests usually placed in horizontal forks of trees and shrubs 1-6.5 m high. Nests often found in close proximity to one another. Five occupied nests were found in two adjacent Coolibahs on 2 September 1972, one nest containing six eggs, the others two or three eggs. M All

*Petroica goodenovii* (Red-capped Robin). Present in winter and spring all years although only one 1973 record (June). Not common—only one pair during eight days in August 1970 and one pair in eight days April 1972. Not recorded in March. Breeding recorded October 1972. PN All

*Melanodryas cucullata* (Hooded Robin). Not common but recorded during most visits. Only one March record (1973). PN All

- Pachycephala rufiventris* (Rufous Whistler). Common especially on sand-ridges. Not recorded March 1971 and 1973. S 1, 2
- Colluricincla rufiventris* (Western Shrike-Thrush). Common during all visits and in all habitats. Nests with eggs found late August. S All
- Oreoica gutturalis* (Crested Bell-bird). Common in all habitats. Breeding observed August-October. S All
- Rhipidura fuliginosa* (Grey Fantail). Seen occasionally on sand-ridges; all sightings from May-August period. SU 1
- R. leucophrys* (Willy Wagtail). Seen in all habitats but number present appears to vary e.g. recorded as numerous May 1971 but only two pairs seen in five days March 1971 and only one pair in 13 days in August 1971. Breeding recorded September 1969 and May 1971. PN All
- Sphenostoma cristatum* (Wedgebill). Common in all habitats except open flats. Breeding recorded August-October and clutch size two or three. Nests usually built in Curaras and Sandhill Wattles 0.5-2 m above ground and often in creepers growing in these wattles. S 1, 2, 3
- Cinclosoma sp.* (Quail-Thrush). Rare. Three sightings all in vegetation fringing sand-ridges. Species not certain but probably *cinnamomeum*. S 1
- Pomatostomus temporalis* (Grey-crowned Babbler). Present at Rocky Pool.
- P. superciliosus* (White-browed Babbler). Common in all habitats. Breeding recorded June to October. S All
- Cinctorhampus uathewsi* (Rufous Song-lark). Recorded twice (August 1970 and 1972). TN 2, 3, 5
- C. cruralis* (Brown Song-Lark). Common in good season (1970-72), uncommon in 1969 and not recorded 1973. Breeding observed August 1970-72. TN 3, 4, 5
- Malurus splendens* (Splendid Wren). Present in denser thickets especially along bore-drains. S 2, 6
- M. lamberti* (Variegated Wren). Common and usually seen in Wanya and along sand-ridge fringes. Nesting recorded August. Nest containing egg of Horsfield Bronze-Cuckoo found August 1971. S 1, 2, 5, 6
- M. leuconotus* (White-winged Wren). Common on open flats between sand-ridges and in *Koehia* flats on coastal side of Callagiddy. Breeding observed May to October. Nest containing chick of Cuckoo (Black-eared or Horsfield Bronze) found August 1972. S 3, 4, 5
- Sericornis maculatus* (Spotted Scrub-wren). A pair present along bore-drain on Brickhouse May 1971.
- Pyrrholaemus brunneus* (Redthroat). Recorded during most visits but not common; appears to prefer Wanya habitat. S 1, 2
- Calamanthus fuliginosus* (Field-wren). Not recorded on Callagiddy but common in coastal sapphire flats near Carnarvon.
- Aphelocephala leucopsis* (Southern Whiteface). Common in all habitats and breeding observed July-September. S All
- A. nigricincta* (Banded Whiteface). Recorded twice (June 1969 and August 1972) on eastern end of Callagiddy. In both cases, one pair seen in flock of Southern Whitefaces. V
- Acauthiza apicalis* (Broad-tailed Thornbill). Not common and most records from along sand-ridge fringes. S 1
- A. uropygialis* (Chestnut-rumped Thornbill). Common and usually seen on sand-ridges. Nests found in broken-off dead Gidgies and breeding recorded July-September. S 1, 2
- Gerygone fusca* (Western Warbler). Isolated birds seen June-August. SU 1, 2
- Neositta pileata* (Black-capped Sittella). Observed during most visits but not common. Breeding recorded August 1971 and September 1972. S 1, 2, 3, 5
- Climacteris affinis* (White-browed Tree-creeper). Not common and



always observed on sand-ridges. Breeding recorded August 1970, October 1971 and 1972. S1

*C. melanura* (Black-tailed Tree-creeper). Two adults seen feeding fledgling at Rocky Pool, October 1973.

*Acaulthageus rufogularis* (Spiny-cheeked Honeyeater). Recorded all visits. Breeding observed August and October. S All

*Manorina flavigula* (Yellow-throated Miner). Present during all visits. Breeding recorded August and September. S All

*Meliphaga virescens* (Singing Honeyeater). Common in all habitats. Breeding recorded June to October. S All

*M. penicillata* (White-plumed Honeyeater). Common in Coolibah habitat. Breeding observed August-October. S 5

*Phylidonyris albigrons* (White-fronted Honeyeater). Present May-August 1970 and June-August 1972. Nesting recorded June 1970. SU All

*Certhionyx variegatus* (Pied Honeyeater). Common in the winter and spring when season good (1970-72), rare in dry years. Nests containing eggs or chicks were found in August 1970-72. TN 1, 2

*Epthianura tricolor* (Crimson Chat). Common all years except 1973 when it was recorded only in June. Breeding observed August 1970 and 1972. PN All

*Dicaeum hirundinaceum* (Mistletoe-bird). Present May 1971 and March-June 1972. SU 1, 5

*Pardalotus striatus* (Striated Pardalote). Recorded in June 1972 and 1973. SU 1, 5

*Zosterops lutea* (Yellow Silvereye). Two birds seen May 1971 in flock of Western Silvereyes along bore-drain on Brickhouse (13 km from coast).

*Z. gouldi* (Western Silvereye). Recorded occasionally on coastal side of Callagiddy (May 1971, April and June 1972). SU 3

*Neochmia ruficauda* (Star Finch). Recorded on Callagiddy May 1970 and at Rocky Pool, June 1970. V

*Poephila guttata* (Zebra Finch). Common during all visits. Most breeding records from period August-October although fledglings were present May 1971. One clutch of eight recorded August 1971. Nests frequently found in sticks of Wedge-tailed Eagle nests especially those occupied; also old corvid nests when occupied by Brown Falcons or Nankeen Kestrels. One occupied Brown Falcon nest had two occupied Zebra Finch nests attached to it with two others attached to nearby foliage. S All

*Grallina cyatholeuca* (Magpie-Lark). Present near all permanent water. Breeding recorded August-October. S 5

*Artamus leucorhynchus* (White-breasted Wood-Swallow). Present on coastal plain near Carnarvon, June 1970.

*A. personatus* (Masked Wood-Swallow). Common August-October all years except 1969 and occasionally seen before and after this period. Large flocks seen in May and August 1970. Breeding recorded August and September 1970-72 and October 1971. Six nests inspected 23-29 August 1971 contained 1-3 eggs. Of 20 inspected 28 August-1 September 1972, five contained one egg, eight contained two eggs, five contained three eggs and one contained two chicks. Nest invariably lined with the twining herb *Stenopetalum anfractum*. TN All

*A. superciliosus* (White-browed Wood-Swallow). A pair seen August 1972. V

*A. cinereus* (Black-faced Wood-Swallow). Common in all habitats. Clumping observed twice on 9 May 1971—10 birds at 12.00 hours and five at 12.30 hours. Breeding records from August-October. In period 20-30 August 1971, four nests contained two to four eggs and two contained four chicks. From 22 August-2 September 1972, four nests contained 2-3 eggs and two contained two chicks. S All

*Craicticus torquatus* (Grey Butcher-bird). Common in all habitats. Nesting reported June (1970) and August (all years). S All

*C. nigrogularis* (Pied Butcher-bird). Common and appears to be restricted to areas adjacent to mills and swamps. Breeding recorded August and September. S 5

*Gymnorhina tibicen* (Black-backed Magpie). Not common and localised in distribution. Nesting records in August and September S 1, 2

*G. dorsalis* (Western Magpie). Less common than preceding species and no breeding records S 1, 2

*Corvus benetti* (Little Crow). Common all habitats. Nesting commenced June in 1970, July-August other years. Of 12 nests inspected late August 1971, three had fresh lining, six contained 2-6 eggs and three contained chicks. In late August 1972, 14 were inspected; one was lined, three contained 3-4 eggs; and ten contained 2-4 chicks, some ready to fledge. A nest with seven eggs recorded on Brickhouse on 11 July 1970. S All

*C. orru* (Australian Crow). Less numerous than Little Crows and usually found in Coolibahs around mills and swamp. S 5

## MAMMALIA

*Tachyglossus aculeatus* (Echidna) Tracks seen in sand-ridge habitat.

*Macropus robustus* (Euro). Confined to sand-ridge and thick acacia scrub. Not as numerous as red kangaroos.

*Megaleia rufa* (Red Kangaroo). Common in all habitats.

*Nyctophilus geoffroyi* (Lesser Long-eared Bat). One collected from hollow tree August 1971.

*Oryctolagus cuniculus* (Rabbit). Occurs in isolated pockets mostly in acacia scrub habitat. No apparent increase in density or extension of range following good seasons.

*Mus musculus* (House Mouse). Present at Callagiddy homestead and shearing shed.

*Pseudomys hermannsburgensis* (Pebble Mound Mouse). Tracks attributed to this species seen in sand-ridge country after rain. One trapped August 1972.

*Vulpes vulpes* (Fox). Present in all habitats.

*Felis catus* (Cat). Seen in all habitats.

*Capra hircus* (Goat). Common in thick acacia habitats where flocks exceeding 20 individuals often recorded.

## DISCUSSION

A total of 152 vertebrates were recorded on Callagiddy in 5 years. The majority of species were birds. Native mammals were poorly represented. Reptiles were well represented (31 species) although Pianka (1969) has recorded 40 species in one sand-ridge habitat in the Great Victoria Desert. The Bobtail Skink (*Trachysaurus rugosus*) was probably introduced to the banana plantations along the river at Carnarvon (G. M. Storr pers. comm.). It is now found on the western side of Callagiddy, an extension of 30 km.

There seem to be little published data on the bird fauna of this area. Kikkawa and Pearse (1969) considered there were 63 species of land birds in 12 selected orders in the Carnarvon area. Data presented here lists 83 species from these same orders and this figure does not include Mangrove Golden Whistler (*Pachycephala melanura*), White-breasted Whistler (*P. lanioides*), Samphire Thornbill (*Acanthiza iredalei*) and Dusky Warbler (*Gerygone tenebrosa*) which were recorded at Bush Bay (see Fig. 1) by the 4th Harold Hall Expedition in June, 1966 (Hall, 1974).

Table 2 shows the number of bird species found in each of the defined habitats.

TABLE 2.—NUMBER OF BIRD SPECIES (excluding vagrants and water-birds) ON CALLAGIDDY ACCORDING TO STATUS AND HABITAT.

Status	Total Species	Habitat					
		1. Sand ridge	2. Dense Acacia scrub	3. Coastal flat	4. Inland flat	5. Swamp	6. Bore-drain
Sedentary	48	38	35	28	25	34	25
Partial nomad	10	9	9	10	10	10	9
True nomad	8	6	7	8	7	8	6
Migrant	1	1	1	1	1	1	1
Status unknown	11	9	6	5	5	8	4
<b>TOTAL</b>	<b>78</b>	<b>63</b>	<b>58</b>	<b>52</b>	<b>48</b>	<b>61</b>	<b>45</b>

Sand-ridge and swamp appear to contain the greatest species diversity although neither are as diverse botanically as the dense acacia scrub. The sand-ridge vegetation is dominated by Gidge which grows to twice the height of other trees in the area and so probably gives this habitat the greatest plant height diversity. Swamp vegetation is dominated by Coolibah which is the only native eucalypt on Callagiddy.

The same two trees (Gidgies and Coolibahs) are important nest sites for a number of bird species which either construct stick nests (diurnal raptors, herons, butcher-birds, magpies, crows) or require hollows (some ducks, parrots, owl-nightjars and some passerines).

Gidge has a long straight trunk. During cyclones a number are broken, usually 1-3 m from the ground. The resultant stump becomes hollow from the top and at least 10 species have been recorded nesting in these hollows. Gidge is used extensively in the Carnarvon area for fence posts which also hollow with age and provide nest sites, especially for wood-swallows.

#### ACKNOWLEDGMENTS

The authors are indebted to Dr G. M. Storr, Western Australian Museum, Dr M. D. Tindale, National Herbarium, Sydney and the staff of the Western Australian Herbarium for identifying specimens. Mark Jones, Don Hart and John Bywater assisted in the collection of material. Mr B. V. Fennessy made many valuable comments during the preparation of the manuscript. Frank Knight drew the figures.

Thanks are also due to the owners of Callagiddy (Jim Waite, Bert Johnston and their families) and to the late Frank Burt of Brickhouse for their hospitality and cooperation during this study.

#### REFERENCES

- BROOKER, M. G. 1973. Port Lincoln Parrots feeding on moth larvae. *Emu*, 73: 27-8.
- HALL, B. P. 1974. Birds of the Harold Hall Australian Expeditions 1962-70. *British Museum (Natural History) Publ. No. 745*.
- KIKKAWA, J., and K. PEARSE. 1969. Geographical distribution of land birds in Australia—A numerical analysis. *Aust. J. Zool.*, 17: 821-40.
- PIANKA, E. R. 1969. Habitat specificity, speciation, and species diversity in Australian desert lizards. *Ecology*, 50: 498-502.