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MAMMALS AND BIRDS OF THE LOWER BURDEKIN
RIVER DISTRICT, NORTH QUEENSLAND.
1. INTRODUCTION AND MAMMALS

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SUMMARY

A survey of mammals in the lower Burdekin River district, north Queensland, made during 1971-1972, is described. Forty-four species were recorded, including one Monotremata, 16 Marsupialia and 27 Eutheria, nine of these last introduced. Marsupials included nine macropodids, and eutherians, eight rodents and 12 bats. Habitat types, and estimates of abundance ranging from scarce to abundant, are given.

I. INTRODUCTION

Studies of macropodids near Giru, north Queensland, have been in progress since 1969, and frequent visits have been made each month to this area. The opportunity was taken to use the background knowledge gained from this work for a more detailed survey of all mammals and birds, undertaken from January 1969 to June 1973.

II. THE LOWER BURDEKIN RIVER DISTRICT

The lower Burdekin River district (Figure 1) is of approximately 6 700 km² around the coastal town of Ayr. Natural boundaries are provided to the north-east by the low water tide mark of the Pacific Ocean, including the few small adjacent islands, e.g. Camp Island, and to the south-west by Leichhardt Range. To the north-west the area adjoins the Townsville district (see Lavery and Johnson 1968); the south-eastern boundary was arbitrarily defined at Elliot River because similar coastal plain extended for a considerable distance southwards from there.

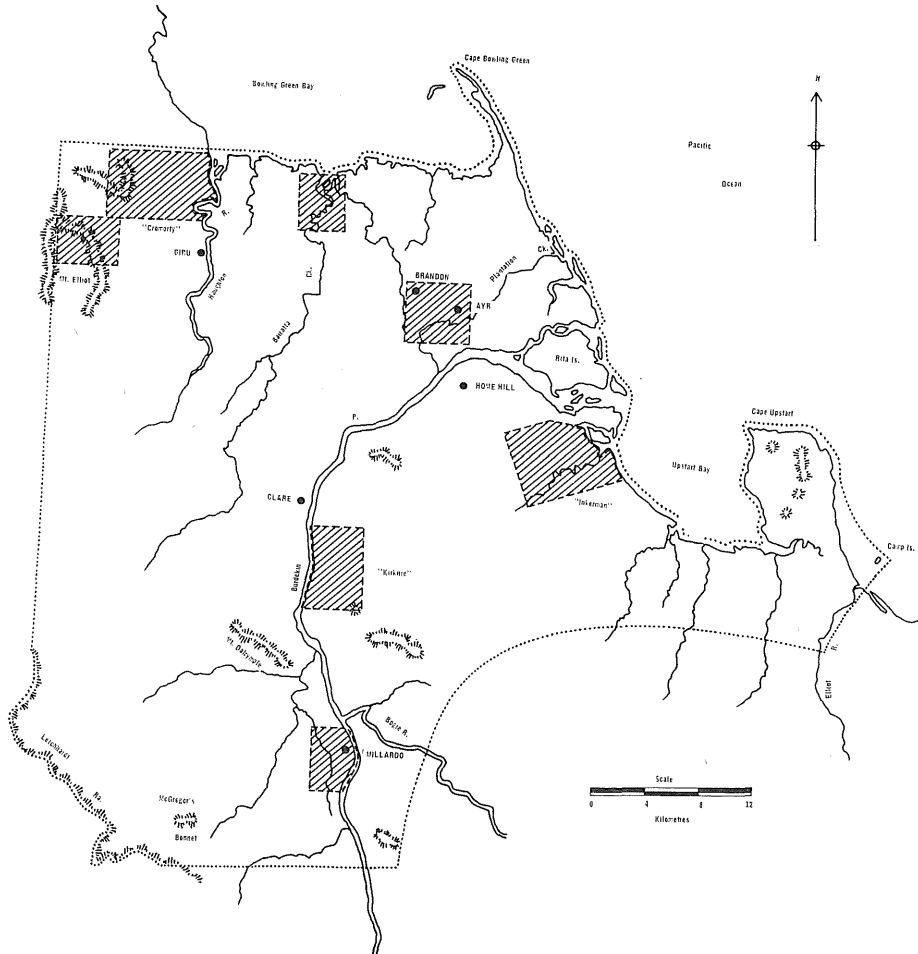


Fig. 1.—The lower Burdekin River district fauna survey 1969–1973. Areas of intensive study diagonally hatched.

Topography is essentially as in the Townsville district—that is, coastal plain bounded by the sea along one front and a long, low coastal range along the other. The large Burdekin River dissects the district while the Haughton River and many lesser streams descend from the hills and also flow more or less directly to the sea. The upland soils are closely correlated with underlying geology; shallow sands and loams and moderately deep red duplex soils occupy the largest areas. Alkaline bleached duplex soils are dominant over the older alluvial plain and red and brown massive earths and deep loams are common to the more recent alluvial soils notably of the Burdekin River delta. Saline bleached duplex soils and saline clays occupy saltpans and mangroves and deep siliceous sands occur on the beach ridges fringing the coast line (Isbell and Murtha 1970).

Mean temperatures and rainfall each month at Millaroo during 1969–1973 are illustrated in Figure 2 as representative of most of the district.

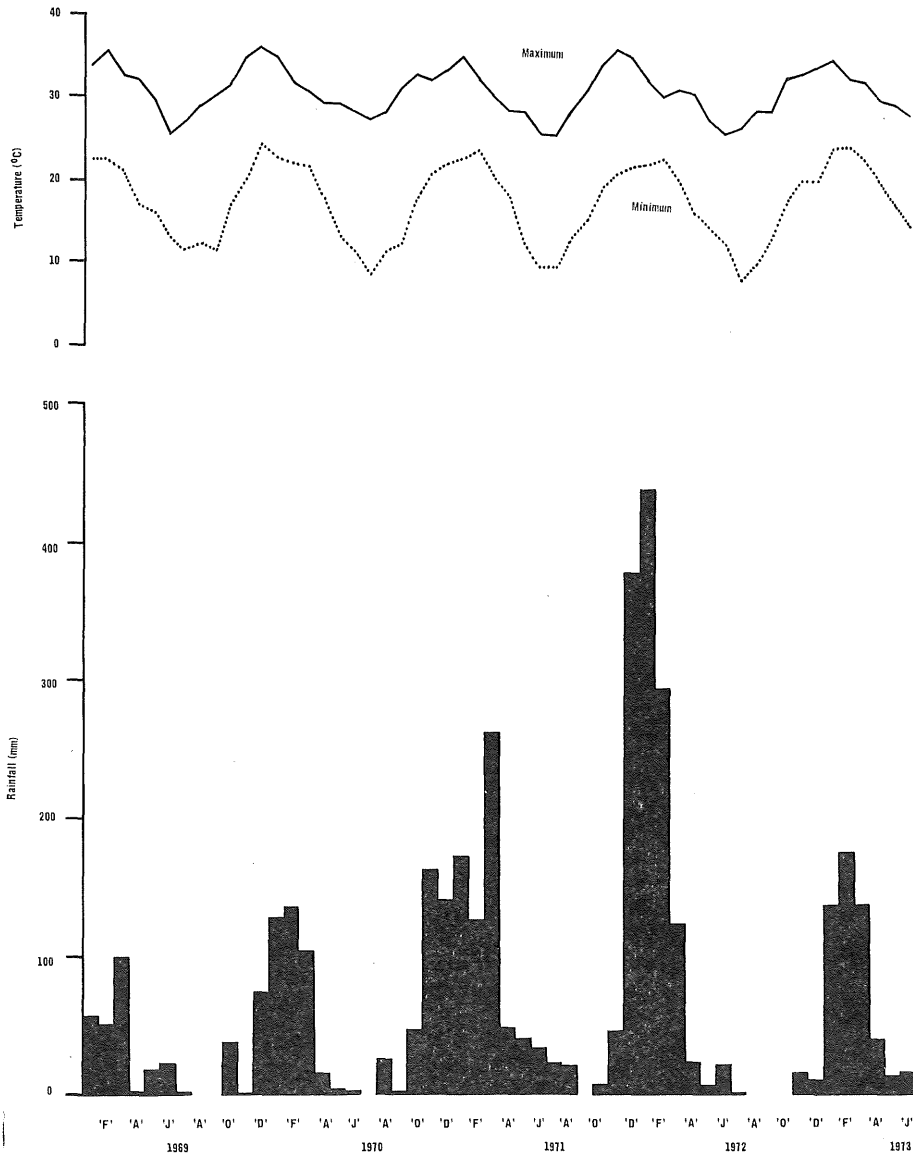


Fig. 2.—Monthly mean maximum and minimum temperatures and total rainfall recorded at Millaroo, 1969–1973.

For survey purposes habitat types recognized were closed forest, open forest, cultivation, freshwaters, saline areas and urban. Closed forest is confined to relatively small areas of simple notophyll vine forest on Mt. Elliot, along edges of streams down this range and out on to the adjacent coastal plain. Elsewhere natural vegetation is largely open eucalypt forest which, in increasingly large areas, has been cleared of trees to improve underlying pastures for

cattle. Cultivation is predominantly of sugar cane (approximately 25 000 hectares) with comparatively recent establishments of rice, sorghum and other crops (in all some 5 000 hectares). Water impoundments for stock and for rice production are widespread and these also increased rapidly in number during the study period. Saline habitat occurs along the sea-shores to include large areas of mangroves and saltpans. Urban development is relatively small and dispersed.

Two National Park Reserves (total area 25 236 hectares) have been established around Mt. Elliot, and 13 other localities (totalling 79 609 hectares) also have been declared Fauna Sanctuaries (see Roff 1962).

III. METHODS

Areas representative of the district and including all habitat types (see Figure 1) were subjected to intensive study and provided most of the records; other parts of the district were checked from time to time. Random traverses were made by day and by night at regular intervals through intensively studied areas. Specimens of all species except those readily identifiable by sight were collected using rifles, shotguns, traps and mist nets. Spotlights were used at night.

Abundance ratings were given following the system of Kirkpatrick (1966) and Lavery and Johnson (1968)—that is, based on the numbers seen or collected during each visit to, or trapping period in, any habitat type as follows:

Abundant: Usually large numbers.

Common: Always at least one, often more.

Uncommon: Not every visit, but more than twice during the survey.

Scarce: Not more than twice during the survey.

No estimate of abundance was provided for apparently uncommon species for which a thorough search was not made.

Specimens of the less common species, and all Microchiroptera, were identified by the Australian Museum, Sydney, and Queensland Museum, Brisbane.

IV. RESULTS

Species collected, together with habitat type and an estimate of abundance, are listed below. An asterisk indicates that the record is based on sightings only.

Names generally follow Iredale and Troughton (1934). Identification of *Chalinolobus nigrogriseus* followed recent revision within the genus by Van Deusen and Koopman (1971).

MONOTREMATA

Tachyglossus aculeatus (Shaw and Nodder). Echidna. Open forest, common; cultivation (including roadsides), uncommon.

MARSUPIALIA

Planigale ingrami (Thomas). Northern planigale. Cultivation (rice paddy), one collected.

Satanellus hallucatus (Gould). Little northern native cat. Closed forest, open forest and cultivation (grassland including roadsides), common.

Isoodon macrourus (Gould). Larger northern bandicoot. Cultivation, abundant; open forest and urban, common.

Petaurus norfolcensis (Kerr). Squirrel-glider. Open forest, one collected.

**Pseudocheirus peregrinus* (Boddaert). Grey Queensland ring-tail. Open forest and cultivation, uncommon.

Trichosurus vulpecula (Kerr). Common brush-tailed possum. Open forest, abundant; closed forest, cultivation and urban, common.

**Phascolarctos cinereus* (Goldfuss). Koala. Open forest, uncommon.

Aepyprymnus rufescens (Gray). Rufous rat-kangaroo. Open forest and cultivation, common.

Lagorchestes conspicillatus Gould. Spectacled hare-wallaby. Open forest, common; cultivation (grasslands), uncommon.

Petrogale inornata Gould. Plain rock-wallaby. Open forest (rocky and steeply inclined areas), abundant; closed forest, uncommon.

Wallabia agilis (Gould). Sandy wallaby. Open forest and cultivation, abundant; freshwaters, saline areas and urban, common.

Wallabia bicolor (Desmarest). Swamp (black-tailed) wallaby. Closed forest and open forest, common; cultivation (grasslands), uncommon.

Wallabia dorsalis (Gray). Black-striped wallaby. Open forest and cultivation (grasslands), uncommon.

Wallabia elegans (Lambert). Whiptail wallaby. Open forest (mainly foot-hills), common; cultivation (grasslands), uncommon.

Osphranter robustus (Gould). Eastern wallaroo. Open forest (mainly foot-hills), common; cultivation (grasslands), uncommon.

Macropus giganteus (Shaw), Grey kangaroo. Open forest and cultivation, common.

EUTHERIA

Hydromys chrysogaster Geoffroy. Water rat. Freshwater and saline areas, common; cultivation, uncommon.

Rattus conatus Thomas. Dusky field rat (Annam River rat). Open forest and cultivation (grasslands), common.

Rattus rattus (L.) Ship rat. Open forest, cultivation (grasslands) and urban, common.

Zyzomys argurus (Thomas), Rock (white-tailed) rat. Closed forest (rocky hillsides), common.

Uromys caudimaculatus (Krefft). Giant scale-tailed rat. Closed forest, common; cultivation (roadsides), uncommon.

Melomys cervinipes (Gould). Fawn-footed scale-tailed rat. Cultivation, common; closed forest, uncommon.

Melomys littoralis (Lonnberg). Little tree rat. Cultivation, uncommon.

Mus musculus (L.) House mouse. Open forest, cultivation and urban, common; closed forest and freshwaters, uncommon.

Canis dingo Meyer. Dingo. Closed forest, open forest, cultivation and freshwaters, uncommon.

Vulpes vulpes (L.) Fox. Open forest and cultivation (grasslands), common.

Felis catus L. Feral cat. Open forest and cultivation, common.

**Cervus axis* Erxleben. Axis deer. Cultivation, uncommon.

**Capra hircus* (L.) Goat. Open forest, uncommon.

Sus scrofa L. Feral pig. Closed forest, open forest, cultivation and freshwaters, abundant; saline areas, uncommon.

**Equus* sp. Brumby. Open forest (hillsides), uncommon.

Pteropus gouldii Peters. Gould's (black) flying-fox. Open forest and saline areas, abundant; urban, common; other habitat types, uncommon.

Pteropus scapulatus Peters. Collared (little reddish) flying-fox. Closed forest, open forest, cultivation and saline areas, common; other habitat types, uncommon.

Rhinolophus megaphyllus Gray. Eastern horseshoe bat. Closed forest (in caves), common; open forest (mainly hillsides) and saline areas, uncommon.

Eptesicus pumilis (Gray). Little bat (little brown bat). Open forest and adjacent freshwaters, common.

Chalinolobus gouldii (Gray). Gould's lobe-lipped bat (Gould's wattled bat). Closed forest, open forest and cultivation (grasslands), common.

Chalinolobus nigrogriseus (Gould). Blackish-grey bat. Open forest and cultivation (grasslands), uncommon.

Nycticeius greyii (Gould). Grey's bat. Open forest and cultivation (grasslands), common.

Miniopterus schreibersii (Kuhl). Large long-tailed bat (bent-winged bat). Closed forest, uncommon.

Taphozous flaviventris Peters. Yellow-bellied free-tailed bat. Freshwaters and adjacent open forest, common; other open forest, uncommon.

Tadarida loriae (Thomas). Little northern scurrying bat. Open forest and adjacent freshwaters, uncommon.

Tadarida planiceps (Peters). Western micromomus (little mastiff bat). Open forest and cultivation (grasslands), uncommon.

Tadarida jobensis (Miller). Plicated bat. Open forest and cultivation (grasslands), common.

V. DISCUSSION

The survey was undertaken in order to provide a list of the mammal species within a zoogeographically interesting and little studied area of rapidly expanding agricultural development in coastal north Queensland. The survey also permitted an assessment of collecting methods to be made by comparing results with those from the adjacent Townsville study district (see Lavery and Johnson 1968).

The mammal fauna of the lower Burdekin River district is, for the most part, the same in type and abundance as that reported for the Townsville area. The southward reduction in the variety of north-eastern Australian closed forest species continues, with the giant scale-tailed rat around Mt. Elliot representing the southernmost of these forms. The native species found in the Townsville district survey but not in this survey included the platypus (*Ornithorynchus anatinus* (Shaw and Nodder)) in the higher rainfall area such as Paluma Dam, the sugar glider (*Petaurus breviceps* Waterhouse) once near Townsville, and the greater possum-glider (*Schoinobates volans* (Kerr)), also extremely localized; the bats only in the Townsville survey included three species from caves occurring in the district (Gould's free-tailed bat (*Taphozous australis* Gould), larger free-tailed bat (*Taphozous georgianus* (Thomas) and brown horseshoe bat (*Hipposideros ater* (Templeton)), two species from open forest adjacent to extensive closed forest (little flying-fox (*Syconycteris australis* (Peters)) and Robinson's tube-nosed bat (*Nyctimene robinsoni* (Thomas)), and one species that also was uncommon and at the southern limit of distribution range at Townsville (De Vis' free-tailed bat (*Taphozous nudicluniatus* De Vis)). Within the Burdekin district another possum (squirrel glider) was collected once, one rat (rock rat) was found to occur in a restricted local distribution, two other rats (dusky field rat and little tree rat) were collected mostly from cultivation not present in the Townsville district, and another uncommon bat species (blackish-grey bat) was collected. The koala and spectacled hare-wallaby records from the Burdekin district have subsequently been extended to Townsville. The records of infrequently collected Chiroptera from both districts emphasize the chance nature of collecting bats. It is unlikely that practicable broad survey methods to increase efficiency of this collecting will be forthcoming.

Previous surveys in the Burdekin district provide insufficient data on populations to assess the overall effects of the agricultural exploitation of habitat. Some species, for example dusky field rat, undoubtedly have benefited from sugar-cane production (see McDougall 1944), while advantage is suggested by frequent invasions into other crops by the larger northern bandicoot and sandy wallaby. Species previously recorded but not located during this survey may have been present: *Rattus culmorum* (Thomas and Dollman), *Leggadina deli-catula* (Gould) and *Miniopterus australis* Tomes (see Thomas and Dollman 1908), and *Pteropus poliocephalus* Temminck (see Andersen 1912), are presently widespread elsewhere (Ride 1970).

With the fox now recorded in the Townsville district, probably invading from the southern district, and the hare (*Lepus europaeus* L.) reputed to occur occasionally at Millaroo, the occurrence of a greater variety of introduced species in the Burdekin district suggests a more serious effect caused by agricultural development than by townships. Thus although the lower Burdekin river district is still a refuge for native mammals, a potential effect of the present rate of agricultural expansion is apparent.

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REFERENCES

- ANDERSEN, K. (1912).—"Catalogue of the Chiroptera in the collection of the British Museum. Second edition. Vol. 1 Megachiroptera". (British Museum (Natural History): London.)
- IREDALE, T., and TROUGHTON, E. Le G. (1934).—A checklist of the mammals recorded from Australia. *Mem. Aust. Mus.* 6:1-122.
- ISELL, R. F., and MURTHA, G. G. (1970).—Soils, Burdekin-Townsville region, Queensland. *Res. Ser. Geog. Sect., Dept. National Development, Canberra:* 1-40.
- KIRKPATRICK, T. H. (1966).—Mammals, birds and reptiles of the Warwick district, Queensland. 1. Introduction and mammals. *Qd J. agric. Anim. Sci.* 23:591-8.
- LAVERY, H. J., and JOHNSON, P. M. (1968).—Mammals and birds of the Townsville district, north Queensland. 1. Introduction and mammals. *Qd J. agric. Anim. Sci.* 25:29-37.
- MCDougALL, W. A. (1944).—An investigation of the rat pest problem in Queensland cane-fields. 2. Species and habits. *Qd J. agric. Sci.* 1 (2):48-78.
- RIDE, W. D. L. (1970).—"A Guide to the Native Mammals of Australia". (Oxford University Press: Melbourne.)
- ROFF, C. (1962).—"Queensland Fauna Sanctuaries". (Department of Agriculture and Stock: Brisbane.)
- THOMAS, O., and DOLLMAN, G. (1908).—On mammals from Inkerman, North Queensland, presented to the National Museum by Sir William Ingram, Bt., and the Hon. John Forrest. *Proc. Zool. Soc. Lond.* 1908: 788-94.
- VAN DEUSEN, H. M., and KOOPMAN, K. F. (1971).—Results of the Archbold Expeditions. No. 95. The genus *Chalinolobus* (Chiroptera, Vespertilionidae). Taxonomic review of *Chalinolobus picatus*, *C. nigrogriseus*, and *C. rogersi*. *Amer. Mus. Novit.* 2468:1-30.

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