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MAMMALS AND BIRDS OF THE INGHAM DISTRICT, NORTH QUEENSLAND

1. INTRODUCTION AND MAMMALS

by H. J. LAVERY, M.Sc., Ph.D., and R. J. GRIMES, Q.D.A.H.

SUMMARY

A survey of mammals in the Ingham district, north Queensland, made from 1970 to 1973, is reported. Sixty-two species were recorded, including two Prototheria, 26 Metatheria and 34 Eutheria, seven of the last introduced. Marsupials included 10 phalangers and nine macropodids, and eutherians 19 bats and 10 rodents. Habitat types, and estimates of frequency ranging from scarce to abundant, are given.

I. INTRODUCTION

Investigations of the tropical closed forest habitat of selected fauna have been in progress in north Queensland since 1970 and these studies have involved frequent visits to the Herbert River basin. The opportunity was taken to conduct concurrently a more comprehensive survey of all mammal and bird species, from October 1970 to December 1973.

II. THE INGHAM DISTRICT

The Ingham district (figure 1) comprises some 5 500 km^2 around the coastal towns of Ingham and Cardwell. Natural boundaries are provided to the east by the low water tide mark of the Pacific Ocean, including Rockingham Bay but excluding Hinchinbrook Island, and to the west by Seaview Range including Kirrama Tableland. To the south the area adjoins the Townsville district (see Lavery and Johnson 1968) while the northern boundary was defined for practical purposes as the Tully River.

The topography is essentially similar to that of the Townsville district, that is, a coastal plain bounded by the sea along one front and a coastal range along the other. The Herbert River dissects the district and many lesser streams descend between mountain spurs, for example, Cardwell Range, to the sea.

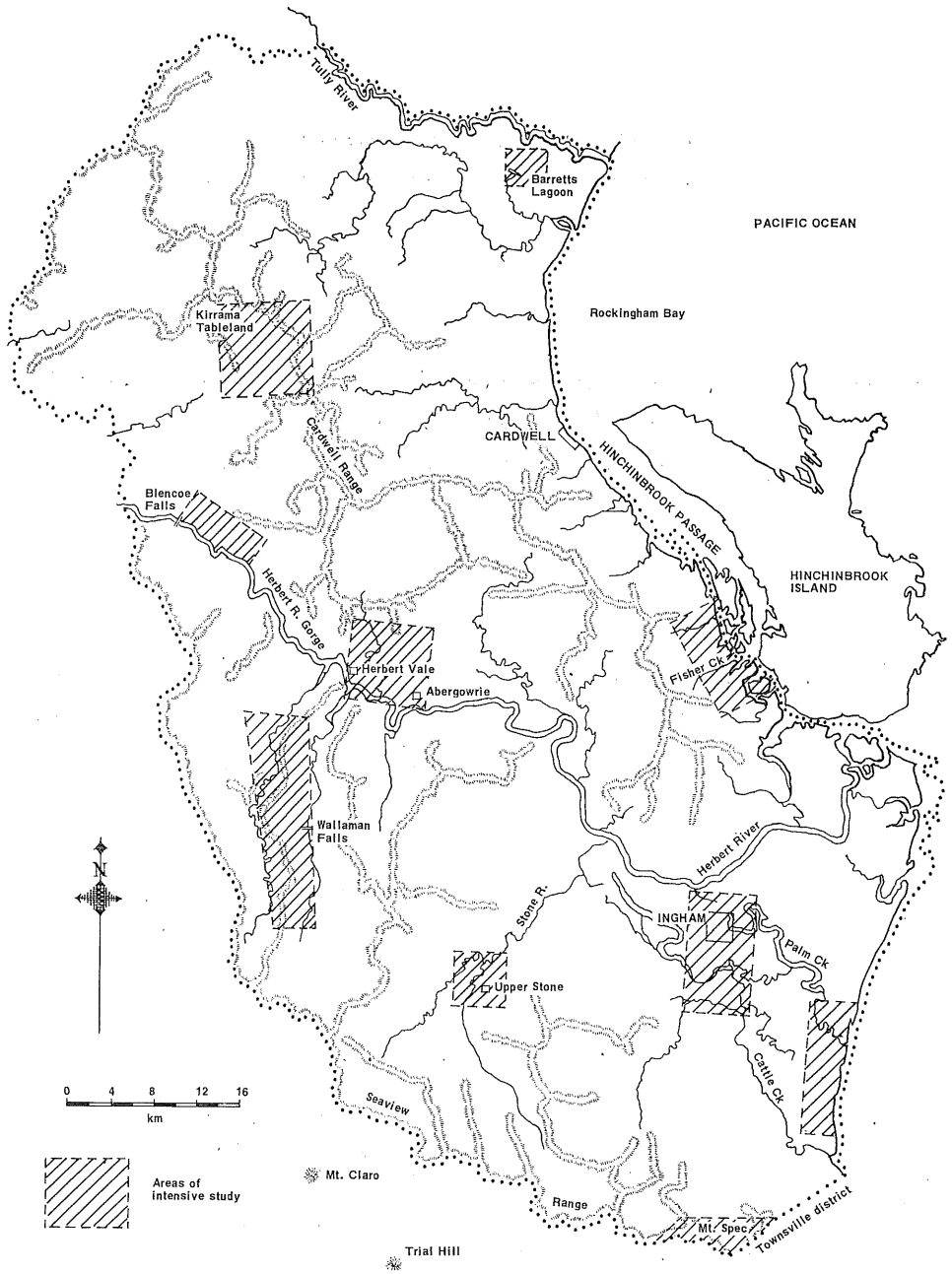

Figure 1. The Ingham district fauna survey area 1970–1973. Areas of intensive study are diagonally hatched.

The soils covered by closed forest are red and yellow friable earths, with red massive earths and deep red sands on the coastal escarpment, for example, at Wallaman Falls. The flood plains, for example, of Herbert River, are neutral yellow duplex soils with small areas of acid duplex soils. The lowland *Melaleuca* plains are of acid yellow duplex soils. Solonchak soils and saline muds underlie the saltpans and mangroves, and deep siliceous sands underlie the sand dunes (Isbell and Murtha 1970).

Mean temperatures and rainfall each month at Cardwell from 1971 to 1973 are shown in figure 2, and are representative of most of the district.

For survey purposes, the recognized habitat types were closed forest, open forest, cultivation, freshwaters, saline areas and urban.

The extensive closed forest is widespread throughout the district as simple microphyll and notophyll-microphyll vine forests on the cloudy wet highlands (1 000 m–1 600 m) and uplands (500 m–1 000 m) respectively; mesophyll-notophyll vine forest on the wet foothills; and some complex mesophyll vine forest on the wet riverine levees and gullies at lower elevations (L. J. Webb and G. J. Tracey, C.S.I.R.O. unpublished data)

Open forest is confined mostly to subcoastal lowlands, and occurs more commonly in the southern part of the district.

Cultivation is widespread on the lowlands and is predominantly of sugar-cane (some 33 800 hectares).

Freshwaters occur as narrow, relatively deep and permanent waterways. There are also numerous impoundments for stock watering purposes.

Saline habitat occurs along the sea-shores and includes some extensive areas of as many as 22 species of mangroves (Webb 1966).

Towns are relatively small and dispersed.

Eight National Parks, seven of these around waterfalls, have been established covering 18 836 hectares. Seventeen other localities (totalling 103 559 hectares) have been declared Fauna Sanctuaries (Departments of Forestry and Primary Industries, unpublished data).

III. METHODS

Selected areas representative of all of the recognized habitat types were studied intensively and these provided most of the records. Other parts of the district were surveyed from time to time (figure 1). Traverses were made by day and by night at intervals through the intensively studied areas. Specimens of all species except those readily identifiable by sight were collected. Rifles, shotguns, traps and mist nets were used, with the aid of spotlights at night.

Frequency 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 this survey
Scarce:	Not more than twice during this survey

An estimate of frequency was not feasible for some species.

Species of the less common species, and all Microchiroptera, were identified by the British Museum (Natural History), London; Australian Museum, Sydney; and Queensland Museum, Brisbane.

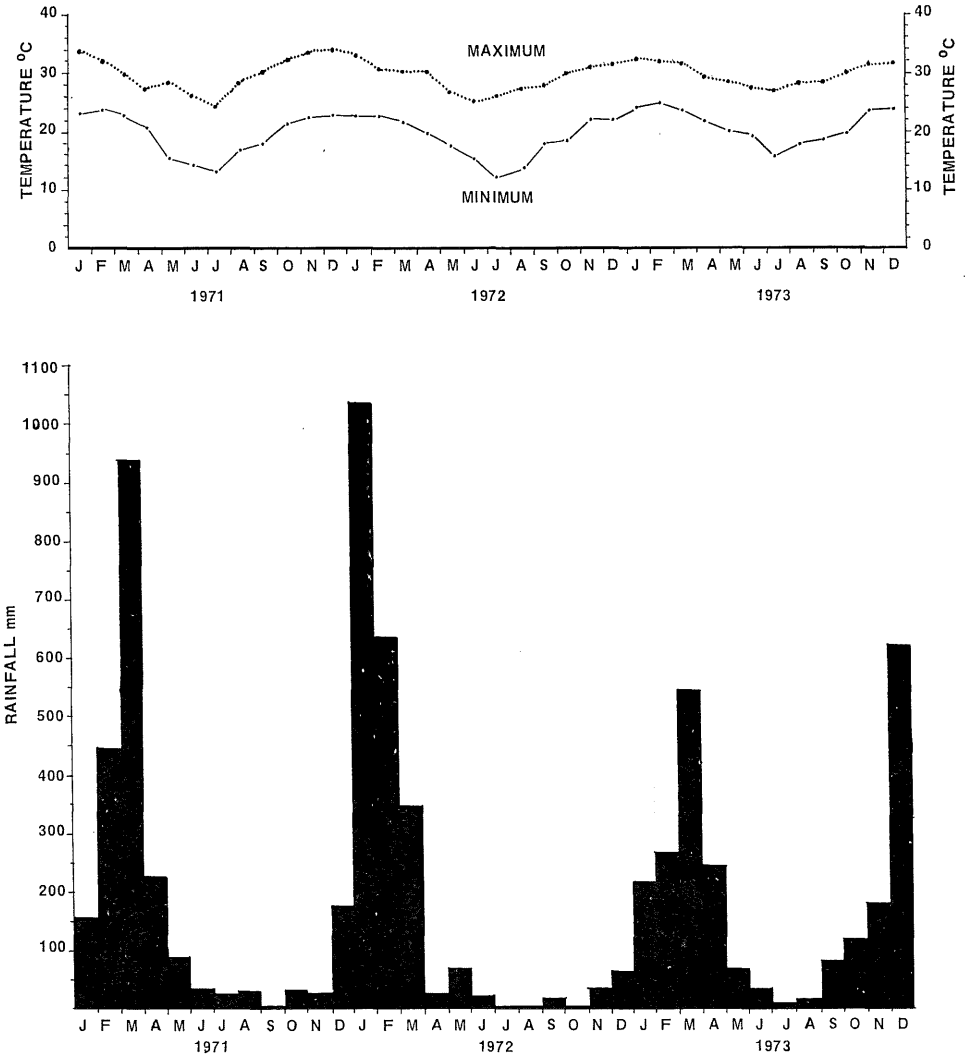

Figure 2. Monthly mean maximum and minimum temperatures and total rainfall recorded at Cardwell 1971–1973.

IV. RESULTS

Species collected, together with habitat types and an estimate of frequency, are listed below. An asterisk indicates that the record is based on sightings without collection.

Names for all species are after a provisional list of Queensland fauna being prepared for publication.

PROTOTHERIA

Ornithorhynchus anatinus (Shaw and Nodder). Platypus. Freshwaters, uncommon.

Tachyglossus aculeatus (Shaw and Nodder). Echidna. Closed forest, open forest and cultivation (roadside grasses), uncommon.

METATHERIA

Antechinus godmani (Thomas). Godman's marsupial-mouse. Open forest, uncommon.

Antechinus maculatus Gould. Pygmy marsupial-mouse. Open forest, uncommon.

Sminthopsis murina (Waterhouse). Common marsupial-mouse. Open forest, uncommon.

Sminthopsis rufigenis Thomas. Lumholtz's marsupial-mouse. Cultivation (sugar-cane fields), uncommon.

Dasyurops maculatus (Kerr). Tiger cat. Closed forest, scarce.

Isoodon macrourus (Gould). Brindled bandicoot. Open forest and cultivation, common.

Perameles nasuta Geoffroy. Long-nosed bandicoot. Closed forest, common.

**Acrobates pygmaeus* (Shaw). Pygmy glider. Open forest, several seen.

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

**Petaurus breviceps* Waterhouse. Sugar glider. Open forest, uncommon.

Dactylopsila trivirgata Gray. Striped possum. Closed forest, uncommon.

Pseudocheirus peregrinus (Boddaert). Grey Queensland ring-tail. Closed forest (margins), open forest and cultivation (roadsides), common.

Pseudocheirus herbertensis (Collett). Herbert River ring-tail. Closed forest, uncommon.

Pseudocheirus archeri (Collett). Striped ring-tail. Closed forest, common.

Hemibelideus lemuroides (Collett). Bushy-tipped ring-tail. Closed forest, uncommon.

Schoinobates volans (Kerr). Greater possum-glider. Open forest, abundant.

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

Hypsiprymnodon moschatus Ramsay. Musk rat-kangaroo. Closed forest, common.

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

Dendrolagus lumholtzi Collett. Lumholtz's tree kangaroo. Closed forest (including open forest margins), uncommon.

Thylogale stigmatica Gould. Red-legged pademelon. Closed forest, abundant.

Wallabia bicolor (Desmarest). Black-tailed wallaby. Open forest, uncommon.

Macropus agilis (Gould). Agile wallaby. Open forest and cultivation, abundant; urban, uncommon.

**Macropus parryi* (Bennett). Whiptail wallaby. Open forest (hillsides), common.

Macropus robustus Gould. Wallaroo. Open forest (rocky hillsides), common.

Macropus giganteus Shaw. Grey kangaroo. Open forest and cultivation, abundant.

EUTHERIA

Pteropus alecto Temminck. Black flying-fox. Open forest and cultivation, common.

Pteropus conspicillatus Gould. Spectacled flying-fox. Closed forest, abundant.

Pteropus scapulatus Peters. Little red flying-fox. Open forest, common.

Nyctimene robinsoni (Thomas). Robinson's tube-nosed bat. Closed forest, uncommon.

Syconycteris australis (Peters). Queensland blossom bat. Open forest, one collected.

Rhinolophus megaphyllus Gray. Eastern horseshoe bat. Open forest, common.

Hipposideros diadema (Geoffroy). Diadem bat. Closed forest, uncommon.

Nyctophilus timoriensis (Geoffroy. Large long-eared bat. Closed forest, one collected.

Nyctophilus bifax Thomas. North Queensland long-eared bat. Closed forest, one collected.

Eptesicus pumilis (Gray). Little bat. Open forest and urban (buildings), common.

Chalinolobus gouldii (Gray). Gould's bat. Open forest and cultivation (grasslands), common.

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

Nycticeius ruepellii Peters. Greater broad-nosed bat. Open forest, one collected.

Nycticeius greyii (Gould). Little broad-nosed bat. Open forest, common.

Nycticeius sanborni (Troughton). Sanborn's broad-nosed bat. Open forest, one collected.

Miniopterus schreibersii (Kuhl). Bent-winged bat. Open forest and adjacent cultivation, uncommon.

Miniopterus australis Tomes. Little bent-winged bat. Open forest, common.

Tadarida loriae (Thomas). Loria's mastiff bat. Open forest and cultivation (grasslands), common.

Tadarida planiceps (Peters). Little mastiff bat. Open forest, common.

Hydromys chrysogaster Geoffroy. Water rat. Freshwaters, uncommon.

Mus musculus (L.). House mouse. Cultivation and urban, common.

Rattus rattus L. Ship rat. Urban and cultivation, common.

Rattus assimilis (Gould). Allied rat. Closed forest, abundant.

Rattus lutreolus (Gray). Eastern swamp rat. Open forest (near closed forest), one collected.

Rattus conatus Thomas. Dusky field rat. Open forest and cultivation, abundant.

Rattus culmorum (Thomas and Dollman). Brown field rat. Open forest, two collected.

Uromys caudimaculatus (Krefft). Giant white-tailed rat. Closed forest, common.

Melomys cervinipes (Gould). Fawn-footed scale-tailed rat. Closed forest and saline areas (mangroves), common.

Melomys littoralis (Lonnberg). Little scale-tailed rat. Open forest, common.

Canis dingo Meyer. Dingo. Closed forest, open forest and cultivation, common.

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

**Equus caballus* L. Brumby. Open forest, uncommon.

Sus scrofa L. Feral pig. Closed forest, open forest, cultivation and freshwaters, abundant.

Bubalus bubalis (L.). Feral buffalo. Open forest, scarce.

V. DISCUSSION

The mammal fauna of the Ingham district is more diverse than shown by similar previous surveys in Queensland (Kirkpatrick 1966, Lavery and Johnson 1968, 1974, McEvoy and Kirkpatrick 1971). All families contained more species than earlier recorded.

The additional fauna recorded was mainly of closed forest species endemic to north-eastern Australia, for example, Godman's marsupial-mouse, Herbert River ring-tail, bushy-tipped ring-tail, musk rat-kangaroo and Lumholtz's tree kangaroo. Although many of these had type localities within the district, most were uncommon there.

Other species, for example, Lumholtz's marsupial-mouse, tiger cat and spectacled flying-fox, occurred because of the more extensive closed forest habitat, compared with adjacent districts, for example, Townsville and lower Burdekin River (Lavery and Johnson 1968, 1974). Conversely, the northern planigale (*Planigale ingrami* (Thomas)) and spectacled hare-wallaby (*Lagorchestes conspicillatus* Gould) probably were absent because there was insufficient open forest habitat.

The yellow-footed marsupial-mouse (*Antechinus flavipes* (Waterhouse)), previously collected from the Ingham district (Collett 1887), was collected at Mt Spec on 30 July 1969.

Other species which may occur in restricted local distributions within the study area are the—

little northern native-cat (*Dasyurus hallucatus* (Gould)), previously collected (Collett *loc. cit.*);

lesser possum-glider (*Schoinobates minor* (Collett)), collected earlier (Tate 1952);

koala (*Phascolarctos cinereus* (Goldfuss)), reported to have been seen occasionally near Mt Fox;

brush-tailed rock-wallaby (*Petrogale penicillata* (Griffith, Smith and Pidgeon)) taken at nearby Mt Claro on 6 November 1970;

Gould's sheath-tailed bat (*Taphozous australis* Gould) and De Vis' sheath-tailed bat (*Taphozous nudicluniatus* De Vis), reported earlier (Troughton 1925); and

larger sheath-tailed bat (*Taphozous georgianus* (Thomas)), collected at nearby Trial Hill on 6 January 1973.

Collection of the pygmy marsupial-mouse, common marsupial-mouse, squirrel-glider, diadem bat, blackish-grey bat, north Queensland long-eared bat and little bent-winged bat in the Inham district and not the Townsville district was fortuitous. Thus the record of the greater broad-nosed bat in the Ingham district, although representing a considerable extension northwards in range, may also merely reflect inherent difficulties in thorough collecting of bats.

Using observations of earlier frequency of native species, notably by Collett (1887), there is no indication of decline in populations. The incomplete surveys and outdated taxonomy of earlier work make many comparisons impracticable.

The relatively extensive area of closed forest, which most introduced species do not inhabit, has resulted in fewer of these being present than in other surveyed districts. Nevertheless, the conclusion from the lower Burdekin River district survey that intensive agricultural development, in particular, encourages invasions of introduced species (Lavery and Johnson 1974) is confirmed by the occurrence of five such species in the Ingham district. A considerable extent of invasion of crops by native species also occurs (Powell 1973).

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REFERENCES

COLLETT, R. (1887).—On a collection of mammals from central and northern Queensland. *Zool. Jb.* 2:829-940.

ISBELL, R. F., and MURTHA, G. G. (1970).—Soils, Burdekin–Townsville region, Queensland. *Res. Ser. Geogr. Sect., Dept. National Development, Canberra.* pp. 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.

LAVERY, H. J., and JOHNSON, P. M. (1974).—Mammals and birds of the lower Burdekin River district, north Queensland. 1. Introduction and mammals. *Qd J. agric. Anim. Sci.* 31:97-104.

MCEVOY, J. S., and KIRKPATRICK, T. H. (1971).—Mammals and birds of Booringa Shire, Queensland. *Qd J. agric. Anim. Sci.* 28:167-78.

POWELL, J. G. (1973).—Animal pests of the Herbert River district. *Cane Grow. q. Bull.* 36:95-6.

TATE, G. H. H. (1952).—Results of the Archbold Expeditions. No. 66. Mammals of Cape York Peninsula, with notes on the occurence of rain forest in Queensland. *Bull. Am. Mus. nat. Hist.* 98:57-616.

TROUGHTON, E. LeG. (1925).—A revision of the genera *Taphozous* and *Saccolaimus* (Chiroptera) in Australia and New Guinea, including a new species, and a note on two Malayan forms. *Rec. Aust. Mus.* 14:313-39.

WEBB, L. J. (1966).—The identification and conservation of habitat-types in the wet tropical lowlands of north Queensland. *Proc. R. Soc. Qd* 78:59-86.

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The authors are officers of the Fauna Conservation Branch, Queensland Department of Primary Industries, stationed at Pallarenda, Townsville.