

## PART VI

# THE MAMMALS OF THE DRYSDALE RIVER NATIONAL PARK NORTH KIMBERLEY, WESTERN AUSTRALIA

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### INTRODUCTION

When the Western Australian Sub-Committee of the Australian Academy of Science Committee on National Parks recommended that the Drysdale River National Park be created (Anon. 1962) they could only say that "the area can be confidently expected to be rich in such little known and interesting forms of the tropical north as the Rock Wallabies (*Petrogale brachyotis* and *Peradorcas concinna*), the Arnhem Land Possum (*Trichosurus arnhemensis*) and the Flying Possum or Sugar Glider (*Petaurus breviceps*)".

In September 1974, when the Drysdale River National Park was gazetted, nothing specific was known of its mammal fauna although further survey work in western and eastern parts of the Kimberley had substantially improved knowledge of Kimberley mammals generally. Work by the Western Australian Museum in the Lake Argyle area and the Department of Fisheries and Wildlife on the islands along the north-west Kimberley coast is, as yet, unpublished. Material collected by W. H. Butler in the general area prior to 1966 is listed by Bannister (1969) and McKenzie, Chapman and Youngson (1975) present an account of mammals collected on the Prince Regent River Reserve in 1974. In addition, records from the mammal collection of the Western Australian Museum have been drawn upon in the Discussion section.

This paper is based on information collected during an eighteen day biological survey in August 1975. Mammals were systematically collected from twelve sites within the Drysdale River National Park (D.R.N.P.) using trapping and spotlighting techniques similar to those described in McKenzie *et al.* (1975).

Six days were spent at each site. The sites visited are fully described in Kabay, George and Kenneally (this publication) and a map showing their distribution is included in Kabay (this publication).

The technique for bat collection after dark was improved by using a gas lantern to create an area of illumination on top of a cliff at the A2 site, in a woodland clearing at A3 and along the edge of the Drysdale River at B2. Bats became visible as they flew through the lighted area and could be held in a spotlight beam until shot.

All specimens have been lodged in the Western Australian Museum. Registration numbers: M14001 to 14346.

In the annotated species list below, data are presented in the following order:

1. Numbers of male and female specimens collected and collection sites.

2. Descriptions of habitats in which animals were collected. These have been indexed to the Environment section (Kabay *et al.*, this publication) from which more detailed habitat information can be derived.
3. Breeding information.
4. Method of capture.
5. Notes on taxonomy, behaviour, ecology and distribution.

### LIST OF SPECIES

#### MARSUPIALIA

##### FAMILY MACROPODIDAE

###### *Macropus robustus* Gould. **Euro**

2 (1♂, 1♀) from C1, C4. Pick-up skeletal material from A2, C1, C2. Seen at A1, C2.

All types of rugged sandstone country. Habitats (indexed from Kabay *et al.*, this publication) A2(a), C1(a), C2(a), C2(g), C4(c).

One skeleton came from flood debris in a fringing formation of Cadjeput (*M. leucadendron*) and *Pandanus* along the Carson River in C2(e).

The female from C4 had a pouch young.

Shot during the day, pick-up material.

###### *Macropus agilis* (Gould). **Sandy Wallaby.**

3 (2♂, 1♀) from B1, C2, C4.

In low open-woodland of *Eucalyptus* and sorghum with some *Pandanus* along a creek in B1(d).

In fringing formation of Cadjeput (*M. leucadendron*) and *Pandanus* along the Carson River in C2(e)/C2(f).

In low woodland over tall cane grassland on volcanic soils in C4(g).

Shot.

At B1 several were seen along the creek and one was observed drinking. Dingo scats, collected at A2 and C2, contained *M. agilis* hair material.

###### *Petrogale brachyotis* Gould. **Short-eared Rock-Wallaby.**

4 (1♂, 3♀) from B4, C1. Seen at C2, C3, B3.

In rugged King Leopold and Warton sandstone boulder country supporting low woodlands to tall open-shrublands including *Eucalyptus* spp., *Owenia*, *Ficus*, *Acacia* spp., *Brachychiton*, *Terminalia* and/or *Grevillea* spp. over *Plectrachne*—B4(a), C1(a), C2(c), C2(g), C3(e).

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The two females from B4 each had one male pouch young.

Shot both during the day and at night.

#### FAMILY PETAURIDAE

*Petaurus breviceps* Waterhouse. **Sugar Glider** (Colour Plate)

3 (2♂, 1♀) from B1.

In woodland to low woodland of *Eucalyptus* spp. some *Acacia* and *Owenia* over ephemeral grasses on Warton sandstone scree of the Carson Escarpment—B1(b).

Shot and caught by hand at night.

One was eating a Peaceful Dove (*Geopelia striata placida* Gould) when discovered. All were about five metres above the ground, two in *Eucalyptus* trees and one in a tree which was not identified. A third female was collected in an *Owenia vernicosa* tree at the same site but escaped.

#### FAMILY DASYURIDAE

*Planigale maculata* (Gould).

1♂ from C3.

Tall open-shrubland of *Acacia* sp. over tussock grassland with occasional sandstone outcrops on a deep sandy alluvial deposit beside Planigale Creek—C3(d).

Trapped.

The specimen was examined by M. Archer and is included in his revision of *Planigale* (Archer 1976).

#### RODENTIA

##### FAMILY MURIDAE

*Rattus tunneyi* (Thomas). **Tunney's Rat.**

32 (21♂, 11♀) from A2, A3, A4, B1, B2, C1, C2, C3, C4.

Mostly along or adjacent to drainage lines in deep soils supporting closed-grasslands or tussock grasslands of various species of cane grass and often including ferns, sedges and ephemerals. These are normally associated with fringing forests to fringing low open-woodlands which, on creeks and rivers, include species such as *Melaleuca argentea*, *M. leucadendron*, *Pandanus* spp. and *Eucalyptus* spp. On smaller watercourses, grasslands and low open-woodlands of *Eucalyptus* spp. and *Pandanus* often also include *Acacia* spp. and *Grevillea*. This situation was found along watercourses on all geological formations except the Elgee siltstones—i.e. A2(e), A2(f), A2(g), A3(f), A4(a), A4(b), A4(c), B1(d), B2(c), C1(b), C2(b), C3(b), C4(d).

One female was pregnant with 5 foetuses. Others had slightly enlarged uteri and, in three specimens, developed mammae.

Work by C.S.I.R.O. Wildlife Division in Western Arnhem Land (Anon. 1974, p.10) indicates that *Rattus tunneyi* breeds in the dry season. “. . . *Rattus tunneyi* are markedly seasonal breeders. The peak of breeding activity is in the middle part of the dry season”.

Trapped.

*Hydromys chrysogaster* (Geoffroy). **Water Rat.**

2 (2♂) from B4, C1.

Both came from fringing plant formations along watercourses in sandstone country where tussocks of cane grasses are associated with Cadjeputs (*M. argentea*, *M. leucadendron*) and *Pandanus aquaticus*. Found on sandy soil—B4(c); sand and sandstone boulders—C1(d)/C1(e).

Trapped. Pick-up specimen.

*Zyzomys argurus* (Thomas). **Common Rock-Rat.**

86 (46♂, 36♀, 4 unsexed due to damage) from A2, A4, B1, B3, B4, C1, C2, C3, C4.

Recorded in all types of rugged sandstone and siltstone country and in all the associated plant formations; from closed vine thickets under cliffs to low open-woodlands over spinifex to fringing formations along watercourses—A2(c), A2(d), A2(e), A4(e), B1(b), B3(d), B3(e), B3(g), B4(a), B4(d), C1(a), C1(c), C2(a), C3(c), C4(a).

Occasionally also recorded in fringing formations on deep soils where these are immediately adjacent to rugged sandstone country—A2(e)/A2(f), C2(a) to C2(b). Four were recorded in low open-woodlands over patchy spinifex and cane grass where outcrops of sandstone boulders are a conspicuous feature of the environment—A2(b), C4(f).

Ten were pregnant (5 with 3, and 5 with 2 foetuses). A further twenty females had enlarged uteri and developed mammae.

Work by the C.S.I.R.O. Wildlife Division in Western Arnhem Land indicates that *Zyzomys* spp. give birth in all months of the year (Anon. 1974).

Trapped.

*Pseudomys nanus* (Gould). **Western Chestnut Native-Mouse.** (Colour Plate)

43 (24♂, 19♀) from A1, A2, A3, A4, B1, B2, C1, C3, C4.

The majority (25 specimens) came from grasslands and closed-grasslands of cane grasses such as *Sorghum*, of sedges and ephemerals, and sometimes of *Plectrachne*, in and adjacent to watercourses. Upper storeys were often present as low open-forests and open-woodlands variably composed of *Eucalyptus* spp., *Melaleuca viridiflora*, *Pandanus*, *Grevillea* and *Acacia*, or as an open-forest of *Melaleuca leucadendron*, *Eucalyptus ptychocarpa*, *Pandanus* and *Grevillea*—A2(d), A2(f), A3(f), A4(c), B1(d), B2(c), C1(b), C1(a)/C1(b), C3(b). Soils are deep alluvials, sometimes with scattered sandstone or basalt rocks, Cenozoic sandy soils, or dampish heavy soils derived from mudstones.

Also common (10) on the scree sides of the mudstone hills in a hummock and cane grassland with some *Eucalyptus* spp., *Callitris intratropica* and low shrubs, and on heavy soils at the foot of these hills in a tall open-woodland of *Eucalyptus* spp. with patches of dense low *Melaleuca minutifolia* over cane grassland—A3(c), A3(d).

Six specimens came from both sloping and flat country supporting formations ranging from low open-forests to low open-woodlands of *Eucalyptus* spp., *Callitris intratropica* and/or *Acacia* spp. over open cane grass (0.5 m) with occasional spinifex patches. These were found on Cenozoic sandy soils with occasional scattered sandstone rocks—A1(d), A4(a), A4(b). Two further specimens came from a similar structural formation of *Eucalyptus* spp., *Terminalia* and *Pandanus* over closed grassland (0.5 m) on loamy volcanic soil—C4(f).

There was some evidence of reproductive activity as five had some uterine enlargement; one of these had seven uterine implantation scars and developed mammae.

Trapped.

*Pseudomys nanus* is probably synonymous with *P. gracilicaudatus* (Ride 1970, p.155) and the above habitats are similar to habitats described by Parker (1973) for *P. gracilicaudatus* in the Northern Territory.

*Pseudomys delicatulus* (Gould). **Little Native-Mouse.**  
24 (15♂, 9♀) from A1, A2, B1, B2.

Seventeen specimens were collected in both flat and gently sloping country supporting low open-woodlands of *Eucalyptus* spp. and such species as *Callitris intratropica*, *Petalostigma pubescens*, *Terminalia* sp., *Brachychiton* sp., *Erythrophleum chlorostachys* and *Buchanania obovata* over areas of cane grass (*Sorghum*) and patches of *Plectrachne* or *Triodia* hummock grassland. Soils are sandy or loamy with occasional scattered sandstone or volcanic rocks and outcrops—A1(d), A2(b), B1(c), B2(d).

Seven were captured on adjacent deep sandy alluvial soils supporting closed to open-grasslands of cane grasses and in adjacent watercourse fringing formations of trees such as *Melaleuca*, *Eucalyptus* spp. and *Pandanus* over cane grasses—A1(a), B1(d), B2(b)/B2(c), B2(e).

Two were pregnant (one with 4 and one with 2 foetuses). Five others had enlarged uteri.

Calaby and Keith (1974, p.194) commented on this species from the Cobourg Peninsula, Northern Territory: "Animals collected in July and August 1965 were actively breeding and the majority of females were pregnant. The litter size was usually three or four". "Three females dissected in February were not pregnant". Taylor and Horner (1970, p.11) also commented on a sample collected in July and August from the Cobourg Peninsula "We were sampling a population in full reproductive vigour in the dry winter months of July and August". There is also information from Eastern Arnhem Land where Johnson (1964) recorded young of *P. delicatulus* (as *Leggadina delicatula*) collected in July and August, 1948.

Trapped, one shot. Additional material found in feral cat stomachs.

More commonly recorded than in the Prince Regent River Reserve, possibly because suitable grassland habitats were much more widespread in the Drysdale River National Park.

*Pseudomys* sp.

9 (4♂, 5♀) from A2, A3.

Five came from an area of *Melaleuca minutifolia*, *M. viridiflora*, *Cochlospermum fraseri* over an open-grassland of cane grass, with some spinifex hummock grassland, on heavy soils below mudstone hills—A3(d).

The others came from plateaux supporting low open-woodlands to open-woodlands of *Eucalyptus* spp. and at A2, *Erythrophleum chlorostachys* and *Acacia translucens*, over open-hummock grasslands of spinifex and areas of low open-grasslands of cane grass. Soils are sandy and formed a matrix around sandstone and mudstone boulders and outcrops—A2(b), A3(c).

Two had slightly developed mammae.

Trapped.

This species is probably referable to the *Pseudomys* sp. recorded on the Prince Regent River Reserve (McKenzie *et al.* 1975). The above habitats include vegetational situations referable to "valley woodlands" in which *Pseudomys* sp. was recorded on the Prince Regent River Reserve.

## CHIROPTERA

### FAMILY PTEROPODIDAE

*Pteropus scapulatus* Peters. **Red Flying Fox.**  
2♂ from A2.

Flying above the edge of an Upper Pentecost sandstone cliff (Boiga Falls) at the head of a valley—A2(a)/A2(c). Below the cliff is a closed-forest of *Eucalyptus* spp., *Melaleuca leucadendron*, *Pandanus* and *Ficus*—A2(e)/A2(f). On the plateau above the cliff is a low open-woodland of *Eucalyptus* spp., *Erythrophleum chlorostachys* and *Acacia translucens* over *Triodia* hummock grassland—A2(b).

Shot after dark.

Many flying foxes were seen and heard each night at A2 from 2000 hrs onwards. Those recognised in spotlights were all *P. scapulatus*.

*Pteropus alecto* Temminck. **Black Flying Fox.**  
9 (7♂, 2♀) from B2, B4, C2, C4.

Six were shot as they flew along the formations of Cadjeputs and *Pandanus* fringing the Drysdale River—B2(a), B4(c).

Two were taken from a group feeding in a large fruiting *Ficus* tree in a sandstone gully—C2(a).

One was collected from its roost in a *Eucalyptus* tree in a low woodland below the Carson Escarpment—C4(f).

One was pregnant with one foetus.

Shot both after dark (B2, B4, C2) and during daytime (C4).

A colony of at least 30 000 individuals was found on the Drysdale River ca 8 km south of B2. They were roosting in an open-forest of *Melaleuca argentea* and *Pandanus* which fringed the river and covered several small islands. The colony extended for about 2 km along the river. Many were recorded flying along the Drysdale River near A1, B2 and B4 after dark. They were probably from this colony.

#### FAMILY EMBALLONURIDAE

*Taphozous flaviventris* Peters. **Yellow-bellied Sheath-tailed Bat.**

5 (2♂, 3♀) from A2, B2, C3.

Shot above the edge of an Upper Pentecost sandstone cliff (Boiga Falls) at the head of a valley—A2(a)/A2(c). Below the cliff is a closed-forest of *Eucalyptus* spp., *Melaleuca leucadendron*, *Pandanus* and *Ficus*—A2(e)/A2(f). On the plateau above the cliff is a low open-woodland of *Eucalyptus* spp., *Erythrophleum chlorostachys* and *Acacia translucens* over *Triodia* hummock grassland—A2(b).

Also collected in the valley amongst an open-woodland of *Eucalyptus* spp. and *Pandanus* over a dense stand of cane grass—A2(g).

One came from a fringing formation of *Melaleuca argentea*, *M. leucadendron* and *Pandanus* on deep sand along the Drysdale River—B2(a).

Another was shot above a pool in rugged Warton sandstone country. A fringing formation of Cadjeputs and species such as *Barringtonia acutangula*, *Eugenia eucalyptoides* and *Acacia* spp. grows along the creek bed—C3(a).

All females showed some uterine distension and one had developed mammae.

Shot at dusk and night (1800–2000 hrs).

*Taphozous georgianus* (Thomas). **Common Sheath-tailed Bat.**

1♀ from C4.

In a Warton sandstone gully in a low forest of *Eugenia*, *Gardenia*, *Ficus* and other trees and shrubs—C4(d).

Collected after being flushed from its roost during the day.

#### FAMILY MOLOSSIDAE

*Tadarida lorae* (Thomas). **Little Northern Scurrying Bat.**

1♀ from A2.

Flying above the edge of an Upper Pentecost sandstone cliff (Boiga Falls) at the head of a valley—A2(a)/A2(c).

Below the cliff is a closed-forest of *Eucalyptus* spp., *Melaleuca leucadendron*, *Pandanus* and *Ficus*—A2(e)/A2(f). On the plateau above the cliff is a low open-woodland of *Eucalyptus* spp., *Erythrophleum chlorostachys* and *Acacia translucens* over *Triodia* hummock grassland—A2(b).

Shot at dusk.

Johnson (1959) has pointed out that all the small Australian molossid bats of the group including *T. lorae* and *T. norfolkensis* may eventually be shown to represent a single species but the material now available is divisible into distinct northern and southern types. Felten (1964) re-examined Indo-Australian *Tadarida* and distinguished three sub-species: *T.l.lorae*, *T.l.ridei* and *T.l.cobourgiana*. No Western Australian specimens were examined and this population requires further study to see if it is different from the Northern Territory sub-species: *T.l.cobourgiana*.

*Tadarida jobensis* (Miller). **Northern Mastiff Bat.**

5 (1♂, 4♀) from A2. 5 (1♂, 4♀) from outside the reserve near Old Doongan Homestead.

Flying above the edge of an Upper Pentecost sandstone cliff (Boiga Falls) at the head of a valley—A2(a)/A2(c). Below the cliff is a closed-forest of *Eucalyptus* spp., *Melaleuca leucadendron*, *Pandanus* and *Ficus*—A2(e)/A2(f). On the plateau above the cliff is a low open-woodland of *Eucalyptus* spp., *Erythrophleum chlorostachys* and *Acacia translucens* over *Triodia* hummock grassland—A2(b).

Six had enlarged uteri and three of these had developed mammae.

Shot after dark (1900–2230 hrs).

At A2 this was the most common bat observed after dark.

#### FAMILY VESPERTILIONIDAE

*Miniopterus schreibersii* (Kuhl). **Bent-wing Bat.**

9 (4♂, 4♀, 1 damaged) from C2, 1♂ from the Old Doongan Homestead outside the Park.

*Eucalyptus* low open-woodland with *Ficus*, *Pandanus* and *Acacia* and spinifex along a shallow sandstone gully—C2(a)/C2(c).

Shot at dusk (9) and struck from the air with a sandal at night (1).

*Eptesicus pumilus caurinus* Thomas. **Little Bat.**

13 (8♂, 4♀, 1 damaged) from B1, B4, C2, C3.

Taken from caves in sandstone on the Carson Escarpment and from a Fairy Martin nest under an overhang in rugged Warton sandstone country supporting a low open-woodland of *Eucalyptus* spp., *Acacia* spp. and *Ficus* over *Plectrachne* hummock grassland—B4(a).

Also from *Eucalyptus* low open-woodland with *Ficus*, *Acacia* and spinifex along a shallow sandstone gully—

C2(a)/C2(c)—and around a pool in a sandstone watercourse which supports a fringing formation of Cadjeputs and other tree and shrub species—C3(a).

All showed some uterine distension and one was pregnant with two fetuses; another had developed mammae.

Six were shot at dusk, five were taken while roosting in caves, one was taken while roosting in a Fairy Martin nest along with three *Myotis adversus*, and one was dropped by a Little Falcon (*Falco longipennis*).

*Eptesicus douglasi* Kitchener.

5(1♂, 4♀) from C3.

Specimens were taken at the same site as the *E.p. caurinus* from C3(a). The *Eptesicus douglasi*, however, were only shot very close to a rock face on one side of the pool. Many were seen in this situation but it was difficult to collect them.

There was some evidence of reproductive activity as all females had enlarged uteri and three had developed mammae.

Shot at late dusk.

The species is described in Kitchener (1976).

*Nycticeius greyi* (Gould). **Little Broad-nosed Bat.**

5 (2♂, 3♀) from B2, C2.

From a fringing formation of *Melaleuca argentea*, *M. leucadendron* and *Pandanus* on deep sand along the Drysdale River—B2(a).

*Eucalyptus* low open-woodland with *Ficus*, *Pandanus*, *Acacia* and spinifex along a shallow gully—C2(a)/C2(c).

Shot at dusk.

The taxonomy of *Nycticeius* is uncertain. Parker (1973) lists this form in the Northern Territory under *N. balstoni* (Thomas) and comments that northern populations are generally referred to as *N. b. balstoni*. Frith (1973) observed that the number of Australian species is debatable and McKean (1972) stated that "Australian *Nycticeius*, with the exception of *N. rueppellii*, can be distinguished from each other only by slight size differences in various skull and external measurements or by slight differences in the appearance of the baculum. Some forms appear to merge with each other while others are sympatric".

*Myotis adversus* (Horsfield). **Large-footed Myotis.**

17 (2♂, 15♀) from B4.

Taken from three Fairy Martin nests found under an overhang in rugged Warton sandstone country supporting a low open-woodland of *Eucalyptus* spp., *Acacia* spp. and *Ficus* over *Plectrachne* hummock grassland—B4(a).

All the female specimens collected had a distended right uterine horn.

Caught by hand.

One nest contained 11♀ and 1♂, the second nest 2♀ and 1♂ and the third contained only 2♀. A single male *Eptesicus pumilis caurinus* was also in the second nest.

Although the species is known in all Australian mainland states, McKean and Hall (1965) and Parker (1973) list only three specimens from W.A. These specimens are from the "Swan River" and were collected prior to 1841. Two other localities have been recorded recently in W.A. and both are in the Kimberley. W. H. Butler collected from a small colony near Mt Caroline in 1968 and McKenzie *et al.* (1975) collected one female on the Prince Regent River Reserve.

*Chalinolobus nigrogriseus rogersi* Thomas. **Hoary Bat.**

29 (24♂, 5♀) from A2, A4, B2, B3, B4, C2, C3, C4.

Mostly over or adjacent to pools and watercourses in various types of fringing situations. At B2(a) they were collected beside a fringing forest of *Melaleuca leucadendron*, *M. argentea* and *Pandanus* on deep sand with areas of cane grasses and bare sandbars. At B3(d)/B3(e), B4(c), C2(a)/C2(c) and C3(a) they were collected over rugged sandstone country where such plants as *Pandanus*, *Ficus*, *Eucalyptus*, Cadjeputs and *Barringtonia* fringe the watercourses and bare rock sheets are common. At A2(g) and A4(c) they were collected in woodland to low open-forest of *Eucalyptus* spp. and *Pandanus* over dense cane grass along a creek.

At A2 they were also shot above the edge of an Upper Pentecost sandstone cliff (Boiga Falls) at the head of a valley—A2(a)/A2(c). Below the cliff is a closed-forest of *Eucalyptus* spp., *Melaleuca leucadendron*, *Pandanus* and *Ficus*—A2(e)/A2(f). On the plateau above the cliff is a low open-woodland of *Eucalyptus* spp., *Erythrophleum chlorostachys* and *Acacia translucens* over *Triodia* hummock grassland—A2(b).

At C4 they were collected in a low woodland of *Eucalyptus* spp., *Erythrophleum chlorostachys*, *Grevillea* spp., *Buchanania* sp. and *Pandanus* over ephemeral *Sorghum* on sandy soils—C4(f).

All females showed slight uterine distension; one had developed mammae.

Shot at dusk and after dark (1750–2000 hrs). By far the most common bat recorded. One of the first bats seen flying in the evening, appearing in almost full daylight soon after sunset.

Separated from *C. n. nigrogriseus* by Van Deusen and Koopman (1971) who include a map of collection localities up to 1969. They list a specimen from the Drysdale River. It was collected by G. F. Hill in 1910 and lodged in the Western Australian Museum.

*Nyctophilus arnhemensis* (Johnson). **Arnhem Land Long-eared Bat.**

2♂ from B2.

In a fringing formation of *Melaleuca argentea*, *M. leucadendron* and *Pandanus* on sandbanks along the Drysdale River—B2(a).

Shot both at dusk and at night.

New record for Western Australia. Previously known only from the Northern Territory (Johnson 1959). At B2 many were seen flying low over sandbanks on the edge of the Drysdale River and around a *M. argentea* tree. Forearm measurements are 38.8 mm and 36.8 mm.

*Nyctophilus bifax* Thomas. **North Queensland Long-eared Bat.**

1 ♂ from A1.

On a sandbank in a fringing formation of *Melaleuca argentea*, *M. leucadendron* and *Pandanus* along the Drysdale River—A1(a).

Pick-up carcass.

Cranial and external measurements correspond with those listed for both *Nyctophilus bifax* Thomas and *N. daedalus* Thomas in Thomas (1915). The determination was based on the bifurcate baculum. Forearm is 41.8 mm. This is a new record for Western Australia; the species is also known from northern Queensland and, as *N. bifax daedalus* (Johnson 1964), from northern Northern Territory.

*Nyctophilus walkeri* (Thomas).

2 ♂ from B3.

Collected over a large rocky pool in a watercourse fringed by *Melaleuca leucadendron*, *M. argentea* and *Eugenia*. The Pentecost sandstone scree slopes and rock ledges around the pool support *Pandanus*, *Acacia* and *Ficus* over spinifex—B3(d)/B3(e).

Shot at late dusk. Flying low (<1 m) above the water.

The skull and mandible from one of the specimens were compared to the holotype (B.M. 92.4.4.1) by J. E. Hill of the British Museum of Natural History who confirmed it as *Nyctophilus walkeri*, a species not previously recorded in Western Australia. Forearm measurements are 33.4 mm and 32.7 mm. Although Tate (1941, p. 594) referred the holotype to *N. microtis*, a New Guinea species, he also commented that "the tiny species *walkeri* appears to be a wholly distinct species". Its taxonomic status requires investigation.

## MONOTREMATA

### FAMILY TACHYGLOSSIDAE

*Tachyglossus aculeatus* (Shaw). **Echidna.**

Pick-up material from B1, C3. Scats from C2, C4.

All from rugged sandstone country—B1(a), C2(g), C3(c), C4(a).

## CARNIVORA

### FAMILY CANIDAE

*Canis familiaris dingo* Meyer. **Dingo**

No specimens retained.

One dingo was shot in a riverine grassland of cane grass in a fringing formation of *Melaleuca argentea* and *Pandanus*—C1(b). A den, inhabited by an adult female and several young, was found in an open woodland of *Eucalyptus* spp. over cane grass on rocky ground—C3(c). Scats were collected at A2(c) and C2(a).

Remains of *Tachyglossus aculeatus* were collected near the den at C3. Stomach contents from the dingo shot at C1 contained hair. Scats from A2 and C2 all contained both macropod bone material and hair. The hair was examined microscopically and was structurally consistent with Dingo and *Macropus agilis* hairs.

## FAMILY FELIDAE

*Felis catus* (Linnaeus). **Feral Cat.**

No specimens retained. 1 ♂ from B2, another seen at B1. A third was shot outside the reserve near the Old Doongan Homestead.

The B2 specimen was between the fringing formation along the Drysdale River and an area of tall open tussock grassland on sandy alluvial soils—B2(e).

Shot during daytime and at night (2300 hrs).

The stomach contents of the B2 cat included one *Pseudomys delicatulus*, a *Diporiphora* (Agamidae), and amphibian material. The cat collected near the Homestead had remains of four *Pseudomys nanus* and four species of lizard in its gut.

## ARTIODACTYLA

### FAMILY BOVIDAE

*Bos taurus* (Linnaeus). **Feral Cattle.**

No specimens. Seen at A1, A3, A4, B1, B2, C1, C2, C4, Scats and recently used pads were recorded at A2, B4, C3.

Single animals and groups of up to eight cattle were encountered in or near fringing formations of Cadjeputs and *Pandanus* along large watercourses and in woodland formations on sandy soils. Effects of cattle on the vegetation of the reserve are discussed in Kabay *et al.* (this publication).

## DISCUSSION

Twenty eight species of native mammal and two species of introduced mammal were recorded on the Drysdale River National Park during the survey. With the exception of three bat species new to Western Australia, all are known from elsewhere in the north-west Kimberley.

Collections made at localities such as Inglis Gap (17° 10' S, 125° 10' E) and Kalumburu (14° 20' S, 126° 40' E) by W. H. Butler (Bannister 1969), and in the Prince Regent River Reserve (McKenzie *et al.* 1975), suggest that other Kimberley species may be present within the Park (Table 1). These localities are climatically and geologically related to the D.R.N.P. Climatic data in Anon (1975) indicates that Inglis Gap is the more similar area, having an annual average

TABLE 1

SPECIES COLLECTED AT INGLIS GAP, KALUMBURU AND ON THE PRINCE REGENT RIVER RESERVE BUT NOT COLLECTED ON THE DRYSDALE RIVER NATIONAL PARK

Species	Inglis Gap	Kalumburu	Prince Regent
<i>Macropus antilopinus</i>	X		X
<i>Onychogalea unguifera</i>		X	
<i>Peradorcas concinna</i>		X	X
<i>Trichosurus arnhemensis</i>		X	
<i>Wyulda squamicaudata</i>		X	X
<i>Petropseudes dahli</i>		X	X
<i>Isodon macrourus</i>	X*	X	X
<i>Isodon auratus</i>		X	X
<i>Dasyurus hallucatus</i>	X	X	X
<i>Phascogale tapoatafa</i>		X	
<i>Antechinus cf. bilarni</i>		X	X
<i>Sminthopsis</i> sp.		X	
<i>Mesembriomys macrurus</i>			X
<i>Mesembriomys gouldii</i>		X	
<i>Conilurus penicillatus</i>			X
<i>Zyzomys woodwardi</i>		X	X
<i>Melomys</i> sp.		X	X
<i>Macroderma gigas</i>		X†	
<i>Chalinolobus gouldii</i>	X		X
<i>Macroglossus lagochilus</i>			X

\* J. Nelson, pers. comm.

† Douglas (1962)

rainfall of ca 800 mm and an inland location. The D.R.N.P. (900–1 050 mm) receives a lower rainfall than the Prince Regent River Reserve and is substantially less humid than coastal areas such as Kalumburu. An examination of Northern Territory mammal distributions listed in Parker (1973) suggests that species such as *Peradorcas concinna*, *Petropseudes dahli*, *Zyzomys woodwardi* and *Macroglossus lagochilus* are less frequent or absent in inland areas which have an average annual rainfall as low as that of the Drysdale River National Park.

While the Park is geologically similar to the localities mentioned above (Miles, Kenneally and George 1975; Williams and Sofoulis 1971; Derrick and Playford 1973; Gellatly and Sofoulis 1969; Speck 1960), it is geomorphologically much less rugged and has a higher proportion of grassland and savannah woodland. It is worth noting that the greatest mammal diversity on the Prince Regent River Reserve (McKenzie *et al.* 1975) was recorded in the extremely rugged sandstone country. In fact, all or nearly all the Prince Regent specimens of *Peradorcas concinna*, *Petrogale brachyotis*, *Dasyurus hallucatus*, *Antechinus cf. bilarni*, *Zyzomys woodwardi* and *Wyulda squamicaudata* were collected in this sort of country. The large numbers and widespread occurrence of the three *Pseudomys* species on the D.R.N.P. is probably associated with the extent of the grassland and savannah woodland as these were the main habitats in which these rodents were collected. On the other hand the diversity of Microchiroptera recorded on the Drysdale River National Park (11 species) is probably the result of improved spotlighting equipment which allowed more efficient after-dark collecting than was possible during the Prince Regent survey.

This collection provides further evidence of the strong affinities between Kimberley and Arnhem Land faunas because two of the bats—*Nyctophilus arnhemensis* and *N. walkeri*—collected on the D.R.N.P. were previously

known only from Arnhem Land. In addition this survey suggests that mammal species occurring in the two areas occupy similar habitats and have similar reproductive patterns.

In almost every case habitats described for species in this collection were referable to habitats described for the same species in the northern Northern Territory by Johnson (1964), Parker (1973) and Calaby and Keith (1974). Only the habitats described for *Planigale maculata* and *Tadarida loriae* were different; habitat data for these species are known from only a few localities in Northern Territory and only from single specimens on the Drysdale River National Park.

Females with pouch young or with foetuses were recorded in only five of the twenty-six species collected. A further seven species had enlarged uteri and/or swollen teats. No attempt was made to assess the reproductive condition of males. These data are comparable to information from the Northern Territory where births in the dry season (April to September) have been recorded by Johnson (1964), Taylor and Horner (1970) and Calaby and Keith (1974) for a variety of mammal species.

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