

MEMOIRS OF THE QUEENSLAND MUSEUM

BRISBANE

© Queensland Museum
PO Box 3300, South Brisbane 4101, Australia
Phone 06 7 3840 7555
Fax 06 7 3846 1226
Email qmlib@qm.qld.gov.au
Website www.qm.qld.gov.au

National Library of Australia card number
ISSN 0079-8835

NOTE

Papers published in this volume and in all previous volumes of the *Memoirs of the Queensland Museum* maybe reproduced for scientific research, individual study or other educational purposes. Properly acknowledged quotations may be made but queries regarding the republication of any papers should be addressed to the Editor in Chief. Copies of the journal can be purchased from the Queensland Museum Shop.

A Guide to Authors is displayed at the Queensland Museum web site

A Queensland Government Project
Typeset at the Queensland Museum

THE THORNTON PEAK MELOMYS, *MELOMYS HADROURUS* (RODENTIA :
MURIDAE): A NEW RAINFOREST SPECIES FROM NORTHEASTERN
QUEENSLAND, AUSTRALIA.

J.W. WINTER
Queensland National Parks and Wildlife Service
Townsville

ABSTRACT

Melomys hadrourus is described from six specimens collected from Thornton Peak and the McDowall Range, northeastern Queensland. It is a large species within the size range of described *Melomys* such as *M. levipes* and *M. leucogaster*. The well developed white-tipped tail and the robust skull, as demonstrated by the thickness of I¹, suggest affinities with *Uromys*, but in general body size it is distinctly smaller than *Uromys porculus*, the smallest *Uromys*. *M. hadrourus* is considered an upland relict species with no vicariants. All four collection localities are in rainforest in the upland (> 300 m) zone of the Thornton Peak massif, isolated from other upland areas of the Daintree and Bloomfield valleys.

INTRODUCTION

Rainforest in Australia occurs as a series of discontinuous blocks throughout coastal eastern Australia (Webb and Tracey 1981). Within tropical Australia the most extensive area of rainforest is in the Townsville to Cooktown region. This region is of particular interest to the zoogeographer because of the relatively high number of endemic species and of a faunal affinity with New Guinea (*vide* Kikkawa, Monteith and Ingram 1981 for a recent review). The region is geomorphologically diverse and, although extensive collections of mammals have been made from the region (*vide* Lumholtz 1889, Cairn and Grant 1890, Tate 1952, Taylor and Horner 1973), some areas remained unworked by mammalogists. The upland area of the Thornton Peak massif, isolated by the Daintree and Bloomfield valleys (Fig. 1) was one such area. Thus the opportunity of helicopter transport to the summit of Thornton Peak, offered by the Commonwealth Forestry and Timber Bureau (now CSIRO, Division of Forest Research), Atherton, was accepted. The circumstances of the visit and the subsequent capture of a new species of rodent have been given elsewhere (Winter 1978). This newly discovered species is described here.

SYSTEMATICS

Melomys hadrourus sp. nov.

HOLOTYPE: Queensland Museum JM504 adult female, skin and torso in spirit, skull extracted,

collected 16 November 1973, by J.W. Winter.

TYPE LOCALITY: Thornton Peak summit area at altitude 1220 m, latitude 16°09'30''S, longitude 145°21'45''E (Mossman sheet, 1:100,000 series R631, grid reference CC250126), northeastern Queensland, Australia (Fig. 1).

PARATYPES: From Thornton Peak type locality Queensland Museum JM3837 adult female (Watts and Aslin 1981, Pl. 2), skin and torso in spirit, skull extracted, collected 5 June 1974, by J.W. Winter; from southern face of Thornton Peak at altitude 640 m, latitude 16°10'30''S, longitude 145°21'45''E (Mossman CC250108) Australian Museum M12520 adult female, skin in spirit, skull extracted, collected between 3 and 13 November 1975, by H. Posamentier; from southern face of Thornton Peak at altitude 1020 m, latitude 16°10'15''S, longitude 145°22'00''E (Mossman CC252115), Australian Museum M12521 subadult male, skin and torso in spirit, skull extracted, collected 13 November 1975, by H. Posamentier; from McDowall Range crest, northeastern Queensland, at altitude 520 m, latitude 16°06'20''S, longitude 145°20'00''E (Mossman CC218190), Queensland Museum JM2173 subadult male, puppet skin and extracted skull, with torso in spirit, colour photograph (Anon. 1977), and subadult male (escaped), both collected 20 October 1976, by J.W. Winter and R.G. Atherton.

DIAGNOSIS:

A large *Melomys* with head-body length to 180 mm, condylobasal length to 42.7 mm

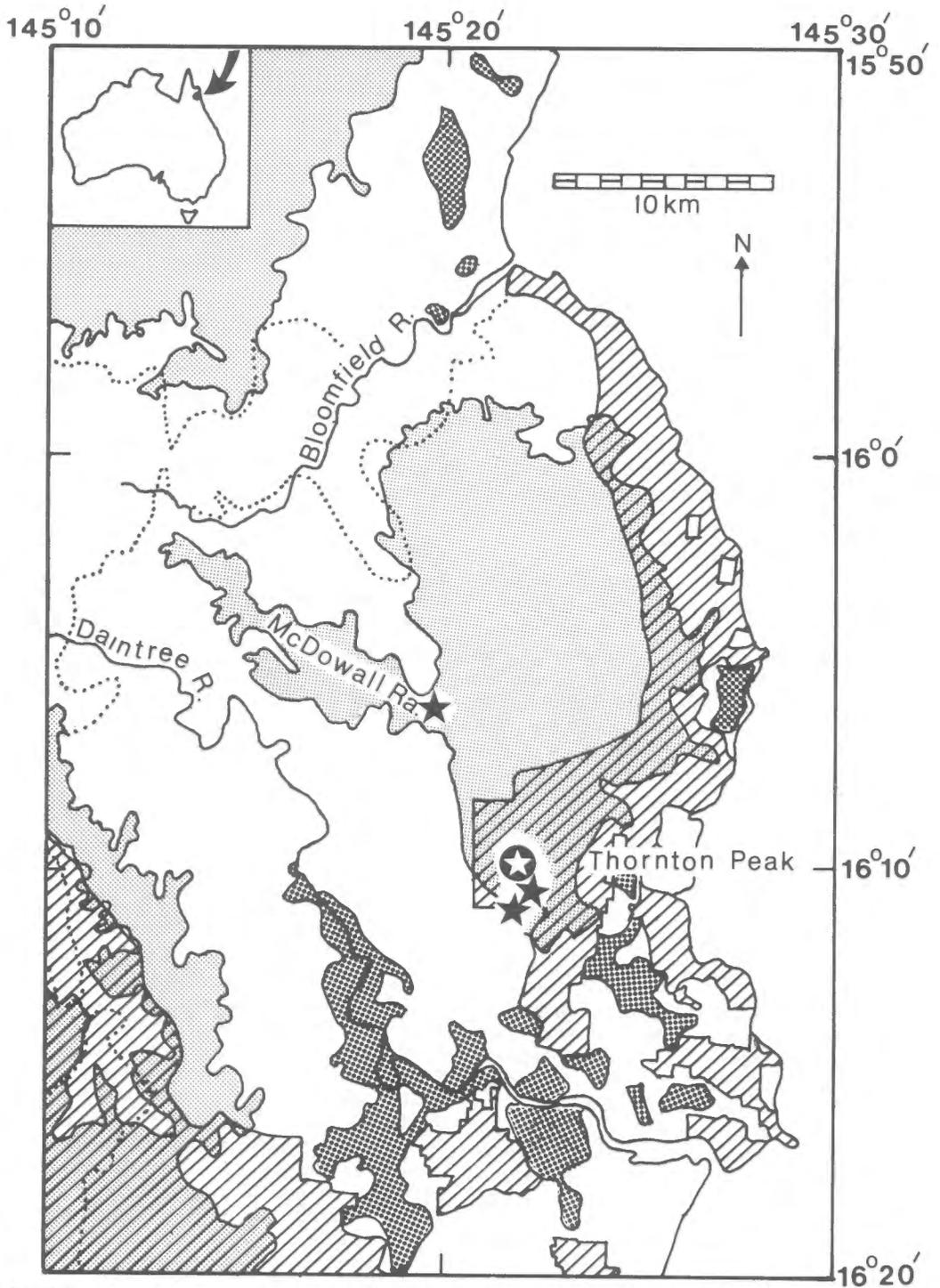


FIGURE 1. Map of the Thornton Peak and adjacent uplands above 300 m (light stippling) in altitude, showing type locality (circled star) and other capture localities (solid stars) of *Melomys hadrourus*, cleared land (heavy stippling), and national park (cross hatching).

(occipitonasal length to 45.3 mm); tail longer than the head-body length, relatively thick (≥ 4.7 mm diameter at the base), apical quarter white, scales non-abutting and subtending one hair per scale. Distinguished from *Uromys* by smaller size (condylobasal length < 43 mm, occipitonasal length < 46 mm) and from juvenile *U. caudimaculatus* by shorter pes length (< 39 mm). Distinguished from other large *Melomys* by the thicker tail; from *M. leucogaster* group by the longer rostrum (nasal length: condylobasal length $< 1: 2.45$); from *M. levipes* group by greater thickness of I' (≥ 2.3 mm) and tail longer than the head-body length. Distinguished from other Australian *Melomys* by greater size (head-body length > 165 mm, pes s.u. > 35 mm, occipitonasal length > 44 mm) and by the thicker tail with only one hair per scale.

DESCRIPTION:

Pelage generally soft and guard hairs not prominent, colour light fawn becoming lighter ventrally, no prominent markings other than a white patch on the throat and sternum. A detailed description of the holotype follows (colour names after Ridgway 1912): dorsally median fur is 15–18 mm long in lumbar region to c. 14 mm between ears and 4–5 mm on nasals, basal two thirds of fur Pale Mouse Gray with apical third Cinnamon-buff on back, Ochraceous Orange between ears and Tawny to Light Buff on nasals giving it a slightly grizzled appearance; terete guard hairs 20–24 mm long on back and c. 15 mm on nasals with basal one third Pale Mouse Gray and apical two thirds Tawny tending to a colourless tip of up to 2 mm; laterally mid-body fur grades to Ochraceous Buff on apical third and Pale Mouse Gray on basal two thirds, on side of face below eye it is Warm Buff for apical third and Pale Mouse Gray for basal two thirds, and in region of mysticeal vibrissae fur Light Buff apically with basal two thirds White; guard hairs greatly reduced in number, but otherwise as dorsally, ventrally fur 8–9 mm long on abdomen with basal half Pallid Mouse Gray median quarter Fawn Colour and apical quarter Light Buff, from mid-thoracic region to chin fur is White throughout its length, width of white patch 10–15 mm with constriction at level of fore-legs.

Ears: Prominent and rounded, skin Fuscous, sparsely covered with Tawny to colourless hairs c. 1 mm long.

Vibrissae: Approximately 30 mysticeal vibrissae on each side and up to 73 mm long, from Mars Brown basally through Tawny medially to colourless apically in varying proportions; three

supraorbital vibrissae on right side (none on left) up to 15 mm long, colour as for mysticeal vibrissae; one postorbital on each side 21–23 mm long, colour as for mysticeal vibrissae; submentals numerous and up to 6 mm long, colourless; ulnar carpals 4 each side and up to 12 mm long, colourless.

Manus: Skin Cream-Buff in preserved specimen and sparsely covered dorsally with colourless hairs c. 2 mm long, except for mid-dorsal line in which median section of hair is partially Tawny; for foot pads see Pl. 1.

Pes: Skin Cream-Buff in preserved specimen and sparsely covered dorsally with colourless hairs c. 2 mm long, except for line of hairs outward of mid-dorsal line in which median section of hair partially Tawny; for foot pads see Pl. 1.

Tail: Longer than head-body (Table 1), diameter at base c. 5 mm, scales round and reduced (not abutting) with slight sculpturing and subtending one hair each (Pl. 1), length of scale hair 1.5 scales on basal portion and less than 0.5 on apical portion; colour of scales Tawny dorsally for basal three quarters, slightly paler ventrally especially at base, apical quarter pure white dorsally and ventrally (Pl. 1), hairs Tawny to colourless. The general impression is of a large thick tail more reminiscent of that of a juvenile *Uromys caudimaculatus caudimaculatus* than of a typical *Melomys*. (vide Pl. 3).

Skull: Characteristic of genus but generally larger and more robust, particularly incisors (Table 2, Pl. 2); crown pattern of cheek teeth characteristic of genus (Pl. 2), alveolar pattern M', M², M¹: 4,4,3 (= pattern D of Knox 1976), anterior face of incisors orange.

Mammary formula 0-2=4, vagina perforate, teats small and not lactating.

VARIATION OF PARATYPES:

Pelage of paratypes similar to that of holotype including ventrally a patch of fur, white to base, from chin to the mid-thoracic region; tail of JM2173 and M12521 with white tip of c. 28 mm (25 + c. 3 mm which withered away — vide photograph of this specimen in Anon. 1977) and 52 mm respectively; JM3837's tail (complete on capture) and that of individual in Pl. 3 also had extensive white tips; apical third of M12520's tail missing on capture; measurements of external features and skulls given in Tables 1 and 2; mammary formula of JM3837 0-2=4, not known for M12520.

A subadult male captured at the McDowall Range locality, and which subsequently escaped, is illustrated in Pl. 3.

ETYMOLOGY:

The specific name is derived from the Greek, *hadros* (well-developed, bulky, stout, large, strong and great) and *oura* (tail), and refers to the well-developed tail of *M. hadrourus*, which is its most characteristic external feature.

TAXONOMIC POSITION

COMPARATIVE MATERIAL EXAMINED:

Melomys levipes shawmayeri Rümmler 1935, type, British Museum (Natural History), London (BM) No. 35.12.20.2 (field No. S.M. 368 in Tate 1951), specimen and photographs; *Melomys levipes lanosus* Thomas 1922, type, BM 22.2.2.26 (not 22.2.22.26 as given in Tate 1951), specimen and photographs; *Melomys levipes levipes* (Thomas 1897), cotype, BM 97.8.7.72, specimen and photographs; *Melomys levipes rattoides* Thomas 1922, type BM 22.2.2.25, specimen and photographs; *Melomys levipes naso* (Thomas 1911), type, BM 11.11.11.54, specimen and photographs; *Uromys sapientis* Thomas 1902, type BM 2.5.1.4, specimen and photographs; *Uromys porculus* Thomas 1904, type BM 89.4.3.8. *Uromys caudimaculatus aruensis* Gray 1873, Museo Civico di Storia Naturale, Genoa (MSNG) No. 3605a and type, No. 3248 (skull missing), specimens only; *Melomys levipes levipes* (Thomas 1897), cotype, MSNG 3600a, specimen only; *Melomys leucogaster leucogaster* (Jentink 1909), American Museum of Natural History (AMNH) No. 105723, specimen and photographs; *Melomys leucogaster latipes* Tate and Archbold 1935, type AMNH 104273, photograph only. *Melomys levipes lorentzii* (Jentink 1909), type, Rijksmuseum van Natuurlijke Historie, Leiden (RNHL) No. 25494 (Field No. 132), photograph only; *Melomys leucogaster leucogaster* (Jentink 1909), type, RNHL 25493 (Field No. 119), photographs only.

Specimens of *Uromys caudimaculatus* (Kreff 1867), *Melomys cervinipes* (Gould 1852), *Melomys capensis* Tate 1952, and *Melomys burtoni* (Ramsay 1887) were on hand from field collections in northeastern Queensland by the author, and *Melomys rubicola* Thomas 1924 from field collections on Bramble Cay by C.J. Limpus (pers. comm.).

Measurements used for comparative purposes in Figs. 2 and 4 were those given in Tate (1951) unless otherwise stated.

GENERIC POSITION:

Melomys hadrourus belongs to the mosaic-tailed rats lacking a distinct prehensile tail, within

the *Uromys* group of genera of Tate (1951). This group consists of relatively small rats within the genus *Melomys* Thomas 1922 and much larger rats of the genera *Uromys* Peters 1867 and *Solomys* Thomas 1922. Tate (1951) included *Solomys* as one of several subgenera of *Uromys*, but Laurie and Hill (1954) accorded it full generic rank (type species *Uromys sapientis* Thomas 1922). *M. hadrourus* lies at the top of the size range of the described *Melomys* as indicated by its skull size (Fig. 2). The skull is generally more heavily built than in other *Melomys*, although *M. levipes naso* is similar. The depth of I', is generally greater than in other *Melomys* the only overlap being with *M. l. leucogaster* (AMNH No. 105723) (Fig. 3). The tail is distinctly thicker than in all other *Melomys* examined and is similar to that of juvenile *Uromys caudimaculatus caudimaculatus* and the juvenile male *Uromys caudimaculatus aruensis* Gray 1873 (type, MSNG No. 3248). Nevertheless *M. hadrourus* is distinctly smaller than *Uromys porculus* Thomas 1904 (the smallest *Uromys*) as is shown by skull size (Fig. 2) and I' depth (Fig. 3). (*Uromys porculus* Thomas 1904, is still retained in the genus *Melomys* by Laurie and Hill (1954), but I agree with Tate's (1951) decision to include it within *Uromys*. My agreement with Tate is based on skull size of *porculus* which fits into the *Uromys* group rather than the *Melomys* group (Fig. 2)). Although *Solomys* has relatively inflated bullae as in *Melomys*, its larger body size and V-shaped rear margin to the palate (Laurie and Hill 1954) distinguish it from *Melomys*.

Therefore, on the basis of general body size which is within the range described for *Melomys*, I have placed *M. hadrourus* in that genus. Other features such as the well-developed tail and thick I', indicate affinities with *Uromys*; the configuration of the tail in particular is aberrant for *Melomys*. These features may well become significant in determining the generic status of *M. hadrourus* should the two genera at some future time be distinguished on anything other than size.

SPECIFIC POSITION:

Melomys hadrourus is similar in size to the larger New Guinean forms within the *M. levipes* and *M. leucogaster* groups (Fig. 2). It differs from the members of the *M. leucogaster* group by having a distinctly longer rostrum, as shown by the ratio of the nasal length to condylobasal length of the skull (Fig. 4), and by the skull longer relative to its breadth (Fig. 2).

Five of the subspecies of *M. levipes* recognised by Tate (1951) are close to *M. hadrourus* in size,

viz *M. l. rattoides*, *M. l. naso*, *M. l. lanosus*, *M. l. shawmayeri*, and *M. l. lorentzii* (*M. l. levipes* with a condylobasal length of 37.0 mm and zygomatic width of 19.4 mm, cotype, BM 97.8.7.72 is not one of the larger members of the *M. levipes* group (Fig. 2)). All five subspecies have slender tails typical of the genus *Melomys*, and all have tails shorter than the head-body length, in contrast to the thick tail of *M. hadrourus* which is longer than the head-body length. The depth of I' in *M. hadrourus* is significantly greater than in these five large *M. levipes* subspecies (Fig. 3). In the photograph of the skull of *M. l. lorentzii* (RNHL 25494) the posterior margin of the palate is obscured by remnants of the soft palate, but in the other four subspecies the margin lies forward of the posterior end of the molar row, whereas in *M. hadrourus* it lies well behind (Pl. 2).

Melomys hadrourus has one hair per tail scale as do *Melomys leucogaster*, *M. levipes naso*, and *M. levipes levipes*, but differs from these respectively by having a longer rostrum, a longer thicker tail, and a larger body size. *Melomys levipes rattoides*, *M. l. shawmayeri*, *M. l. lanosus* all have three hairs per tail scale, as does *M. l. lorentzii* except for one specimen (Tate 1951). *Melomys levipes lorentzii* has a mammary formula of 0-1 = 2 (Zeigler 1972) in contrast to the 0-2 = 4 which is typical for the genus and *M. hadrourus*.

Melomys hadrourus differs from other Australian *Melomys*, which are placed into the *M. cervinipes* (including *capensis* and *rubicola*) and *M. lutillus* (= *burtoni* vide Knox 1978) groups by Tate (1951), by being distinctly larger (Fig. 2) and by having only one hair per tail scale in contrast to the three in the other two groups.

Baverstock, Watts and Hogarth (1977) examined the chromosomes of the paratype (JM3837) (their specimen no. IMVS 181F) of *Melomys hadrourus*. The karyotype had a diploid number of 48, which is the standard number for the Australian species they examined in the *M. cervinipes* and *M. burtoni* complexes. The karyotype differed from *M. ?littoralis* (= *burtoni* vide Knox 1978) by two fixed rearrangements (pairs 2 and 4) and from *M. cervinipes* by three fixed rearrangements (pairs 1, 2 and 4) (Baverstock et al. 1977). From their chromosomal work on the Australian *Melomys*, Baverstock, Watts, Adams and Gelder (1980) concluded that three karyotypic forms occurred in Australia; *M. burtoni*, *M. cervinipes* (including *capensis*), and the Thornton Peak melomys (*M. hadrourus*).

The alveolar pattern (type D) of *Melomys hadrourus* is the same as that of *M. cervinipes* (including *rubicola*) and *M. rufescens* (Alston 1877) but differs from that of the *M. burtoni* group (Knox 1976).

It is concluded, therefore, that *Melomys hadrourus* is a valid species, quite distinct from other described *Melomys*.

HABITAT AND DISTRIBUTION

All specimens of *Melomys hadrourus* were caught in rainforest on the Mareeba Granite of the Thornton Peak massif. The type locality, where JM504 and JM3837 were caught within 100 m of each other, was within 200 m of the head of a gully, with numerous boulders, on the western face of Thornton Peak, and which was one of the northernmost tributaries of Hilda Creek. The gully originated at a fern-covered saddle (*Glyeichenia* sp.) at the northwestern end of the summit valley. The vegetation (Pl. 4) was simple microphyll vine-fern thicket (Tracey 1982) with a canopy height of 6-12 m. Thin wiry lianes and tree ferns were common, with *Lacospadix* palms abundant in the understorey. Ground cover was sparse leaf litter with scattered ferns and tree seedlings between boulders and fallen logs. Mosses and lichens were abundant from the ground layer through to the canopy. The summit area of Thornton Peak is wet with a rainfall likely to be similar to that of the summit of Bellenden Ker, 130 km to the southeast, which has an annual average of 8529 mm recorded over a six year period (Tracey 1982). Even in the dry season months of April to October the summit is enveloped in cloud much of the time.

JM2173 and a subadult male, which subsequently escaped, were caught on the crest of the McDowall Range within 100 m of the road in simple notophyll vine forest (Tracey 1982). Canopy height was 20-25 m and tree diameters mainly in the 40-50 cm range with a few up to 70 cm. There was a straddled understorey and a scattered shrub layer which consisted mainly of *Calamus* clumps without the climbing tendrils. *Lacospadix* palms and tree ferns were scarce, woody lianes moderately common, but wiry lianes absent. Ground cover was sparse and leaf litter and bare soil with sparse tree seedlings and very sparse ferns. This site is below the cloud line that generally envelopes the summit of Thornton Peak, and mosses and lichens were relatively sparse. Rainfall is less than for the summit region, and the locality comes between the 2500 and 3750 mm isohyets (Tracey 1982). M12520 was caught in mesophyll vine forest and M12521 in simple

mesophyll vine forest — simple notophyll vine forest at sites 39 and 40 respectively (Broadbent and Clark 1976) on a steep southerly ridge immediately to the west of the main branch of Hilda Creek.

JM504 and JM3837 were captured in aluminium Elliott traps (33 × 9 × 9 cm) (Pl. 4) set on the ground and baited with sweet-potato in linseed oil. Both McDowall Range animals were caught in cage traps (one aluminium and one wire with slightly larger dimensions than for the above) set on the ground and baited with rolled oats plus aniseed oil and sweet-potato in linseed oil respectively. Both the Australian Museum animals were caught in snap traps (one a Conibear) set on the ground; the bait was either peanut butter compound or aniseed oil (Broadbent and Clark 1976). Table 5 in Broadbent and Clark (1976) lists 5 '*Melomys* "*levipes*" group' as being captured at site 39. There was some confusion over the identity of *M. hadrourus* with *M. cervinipes* at the time. In fact only one specimen of *M. hadrourus* (M12520) was kept from this site and one adult male, probably attributable to *M. hadrourus*, was discarded because of damage received on capture.

All four localities at which *M. hadrourus* has been captured are in the upland (> 300 m) zone of the Thornton Peak massif. The area of this upland zone (measured as a flat surface from the 1:100 000 vegetation map, Tracey and Webb 1975) is approximately 24,780 ha and 96 per cent is rainforest. The Thornton Peak upland zone is isolated from other upland zones to the southwest and northwest by the Daintree and Bloomfield valleys respectively, and the latter, with open forest vegetation, also acts as an ecological barrier (Fig. 1).

Thornton Peak itself (altitude 1374 m) and the eastern fall of the massif are national park (Fig. 1). Approximately 5620 ha (22.7%) of the upland zone is within the national park, the remainder is within timber reserve. The relative isolation and rugged terrain of the area have, to date, protected the upland zone from major forestry, mining and agricultural developments. The clearing of rainforest that has taken place in the area has been restricted to the lowlands (Fig. 1).

HABITS

All specimens of *M. hadrourus* were caught in traps set on the ground, but like *M. cervinipes* and *Uromys caudimaculatus* it is probably scansorial. The stomach of M12521 was filled with a creamy coloured endosperm of a nut. Adult

female JM3837 was captured 5 June 1974 and kept alive in captivity until 2 February 1975. She did not give birth to young. Adult female JM504, captured 16 November 1973, had a perforate vagina and small teats that were not lactating (contents of uteri unknown). The breeding condition of adult female M12520 was not recorded. The three males (JM2173, M12521 and the escaped individual) were all subadults with testes abdominal and captured in October and November. Subadult male, JM2173, when handled, gave squeaks similar to that of *M. cervinipes* but deeper in pitch, and not a *Uromys*-like growl.

At the type locality *M. hadrourus* was recorded as living sympatrically with three other rodents; *M. cervinipes* (Gould 1852), *Rattus fuscipes* (Waterhouse 1839) and *Rattus leucopus* (Gray 1867). At the McDowall Range locality, in addition to these three species, *Uromys caudimaculatus* was also recorded.

DISCUSSION

Melomys hadrourus represents a third phylogenetic line of *Melomys* in Australia with clear differences from the *M. burtoni* and *M. cervinipes/capensis* species groups both in karyotype and in morphology (larger size, well-developed tail, on hair/tail scale). On size alone its closest affinities would seem to be the New Guinean species groups, *M. leucogaster* and *M. levipes*. At one stage it was thought that *M. hadrourus* was closely allied to *M. levipes* (Baverstock et al. 1977) and therefore a vicariant with New Guinean affinity (Kikkawa et al. 1981). *Melomys hadrourus*, however, has certain affinities with *Uromys*, namely the general configuration of the tail and the more robust skull, particularly in the thickness of 1'. It also has other clear differences from *M. leucogaster* (longer rostrum) and *M. levipes* (tail longer than head-body length, one hair per tail scale in contrast to the three in four of the large subspecies, palate margin posterior to tooth row).

It is suggested here that *M. hadrourus*, although included with the genus *Melomys* on size, is an aberrant form for the genus. Whether these differences warrant removing *M. hadrourus* from *Melomys* as a third genus, or alternatively using it to synonymise *Melomys* and *Uromys*, requires an extensive review of the mosaic-tailed rats, beyond the scope of this paper. For the present, it is judged to be sufficiently different from other described species for it to be treated as a species without vicariants.

This being the case, *M. hadrourus* belongs to the group of species, endemic to the Townsville to Cooktown region, and considered to be relicts of a wet- and cool-adapted fauna which may have originated in Australia from a common pre-Pleistocene stock of Australia and New Guinea; mammalian representatives of this group are *Antechinus godmani* (Thomas 1923), *Pseudocheirus herbertensis* (Collett 1884), *Pseudocheirus lemuroides* (Collett 1884) and *Hypsiprymnodon moschatus* Ramsay 1876 (Kikkawa et al. 1981). Their survival has been dependent on the continuous existence of rainforest refugia, of which the uplands of the Thornton Peak massif is one example (Webb and Tracey 1981).

ACKNOWLEDGMENTS

I wish to thank the Commonwealth Forestry Timber Bureau (now CSIRO Division of Forest Research), Atherton, for making available the helicopter transport which enabled me to make the first visit to the summit of Thornton Peak, and to those people who subsequently helped in the search for further specimens of the Thornton Peak melomys — Rob Atherton, Louise Atherton, Cherie Daniel, Curly Matthew, Dan Norris, Ian Shield, Mark Weaver, David Winter and Margaret Winter. I also wish to thank Mr H. Posamentier, the Australian Museum, for making available to me the specimens of *M. hadrourus* that he captured, and Dr P.D. Dwyer, University of Queensland, for the skull of *Uromys anak*. Ms E.J. Knox and Mr J.A. Mahoney very kindly read early drafts of the manuscript and made many useful suggestions for its improvement. Photographs in Pl. 1 and 2 were supplied by the Department of Primary Industries, Photographic Department, and Hans and Judy Beste took the photographs used in Pl. 3. Finally I wish to thank the staff of the British Museum (Natural History), London, and Museo Civico di Storia Naturale, Genoa, the Rijksmuseum van Natuurlijke Historie, Leiden, the American Museum of Natural History, the Australian Museum, and the Queensland Museum for their help in examining their collections and in supplying photographs.

LITERATURE CITED

- ANON., 1977. Eye on the world. *Wildlife, Lond.* **19**: 391.
- BAVERSTOCK, P.R., C.H.S. WATTS, M. ADAMS and M. GELDER, 1980. Chromosomal and electrophoretic studies of Australian *Melomys* (Rodentia : Muridae). *Aust. J. Zool.* **28**: 553-74.
- C.H.S. WATTS and J.T. HOGARTH, 1977. Chromosome evolution in Australian rodents. 1. The Pseudomyinae, the Hydromyinae and the *Uromys/Melomys* group. *Chromosoma, Berl.* **61**: 95-125.
- BROADBENT, J. and S. CLARK, 1976. A faunal survey of East Australian rainforests. Interim Report. (Australian Museum: Sydney).
- CAIRN, E.J. and R. GRANT, 1890. Report of a collecting trip to north-eastern Queensland during April to September, 1889. *Rec. Aust. Mus.* **1**: 27-31.
- CORBET, G., 1964. Preservation and measurements of mammals, pp. 116-28 in 'The handbook of British mammals'. H.N. Southern (ed.) (Blackwell Scientific Publications: Oxford).
- KIKKAWA, J., G.B. MONTEITH and G. INGRAM, 1981. Cape York Peninsula: Major region of faunal interchange, pp. 1695-1742, in A. Keast, (ed.), 'Ecological biogeography of Australia'. Vol. 3 (Dr W. Junk bv Publishers: The Hague).
- KNOX, E., 1976. Upper molar alveolar patterns of some Muridae in Queensland and Papua New Guinea. *Mem. Qd Mus.* **17**: 457-9.
1978. A note on the identification of *Melomys* species (Rodentia : Muridae) in Australia. *J. Zool. Lond.* **185**: 276-7.
- LAURIE, E.M.O. and J.E. HILL, 1954. 'List of land mammals of New Guinea, Celebes and adjacent islands 1758-1952'. (British Museum (Natural History): London).
- LUMHOLTZ, C., 1889. 'Among cannibals, an account of four years' travels in Australia and of camp life with the aborigines of Queensland'. (John Murray: London).
- MAHONEY, J.A., 1972. The identity of *Hapalotis personata* Krefft, 1867 (Muridae, *Rattus*) from Cape York, Queensland. *Aust. Mammal.* **1**: 14-9.
- RIDGWAY, R., 1912. 'Color standards and color nomenclature'. (Publ. by author: Washington).
- TATE, G.H.H., 1951. Results of the Archbold Expeditions. No. 65. The rodents of Australia and New Guinea. *Bull. Amer. Mus. Nat. Hist.* **97**: 183-430.
1952. Results of the Archbold Expedition. No. 66. Mammals of Cape York Peninsula, with notes of the occurrence of rainforest in Queensland. *Bull. Amer. Mus. Nat. Hist.* **98**: 563-616.

- TAYLOR, J.M. and B.E. HORNER, 1973. Results of the Archbold Expeditions. No. 98. Systematics of native Australian *Rattus* (Rodentia, Muridae). *Bull. Amer. Mus. Nat. Hist.* **150**: 1-130.
- TRACEY, J.G., 1982. 'The vegetation of the humid tropical region of North Queensland'. (CSIRO: Melbourne).
- and L.J. WEBB, 1975. 'Vegetation of the humid tropical region of North Queensland'. (15 maps at 1:100 000 scale and key). (CSIRO: Indooroopilly).
- WATTS, C.H.S., and H.J. ASLIN, 1981. 'The rodents of Australia'. (Angus and Robertson: Sydney).
- WEBB, L.J. and J.G. TRACEY, 1981. Australian rainforests: patterns and change, pp. 605-94, in A. Keast (ed.), 'Ecological biogeography of Australia'. Volume 1. (Dr W. Junk bv Publishers: The Hague).
- WINTER, J.W., 1978. The rainforest, pp. 113-46, in H.J. Lavery (ed.), 'Exploration North'. (Richmond Hill Press: Richmond).
- ZEIGLER, A.C., 1972. 'Guide to native land mammals of northeast New Guinea. (Preliminary version for use of Wau Ecology Institute)'. Mimeographed, 28 pp. Department of Entomology, Bernice P. Bishop Museum, Honolulu, Hawaii.

TABLE 1: EXTERNAL BODY MEASUREMENTS, WEIGHTS AND HAIRS PER TAIL SCALE OF *MELOMYS HADROURUS*.
*MEASUREMENTS TAKEN BY H. POSAMENTIER.

| | Holotype | | Paratypes | | Escaped | |
|----------------------------|----------|---------|-----------|---------|-----------|-----------|
| | JM504 | JM3837 | JM2173 | M12520* | M12521* | |
| Museum no. | JM504 | JM3837 | JM2173 | M12520* | M12521* | |
| Status | Adult ♀ | Adult ♀ | S-Adult ♂ | Adult ♀ | S-Adult ♂ | S-Adult ♂ |
| Weight (g) | 149 | 164 | 125 | 162 | 149 | 152 |
| Head-body length (mm) | 180 | 177 | 174 | 171 | 173 | 184 |
| Tail-vent length (mm) | 196 | - | 184 | - | 188 | 197 |
| Pes s.u. (mm) | 38 | 37 | 38 | 38 | 38 | 37 |
| Ear (to notch) (mm) | 24 | 23 | 25 | 24.5 | 23.5 | 23 |
| Tail diameter at base (mm) | 5.1 | 5.2 | 4.7 | 5.6 | 5.1 | - |
| Tail scale rows/cm | 12.5 | 13 | 11 | 12 | 13.5 | - |
| Hairs/tail scale | 1 | 1 | 1 | 1 | 1 | - |

TABLE 2: SKULL MEASUREMENTS (IN MM) OF *MELOMYS HADROURUS*. DEFINITION OF MEASUREMENTS AS GIVEN BY, — TAYLOR AND HORNER (1973),² — MAHONEY (1972), OR³— CORBET (1964). 1¹ THICKNESS MEASURED PARALLEL TO HORIZONTAL PLANE FROM POSTERIOR POINT OF EMERGENCE FROM PREMAXILLA.

| | Holotype | | Paratypes | | |
|--|----------|---------|-----------|---------|---------|
| | JM504 | JM3837 | M12520 | M12521 | JM2173 |
| ¹ Occipitonasal length | 45.3 | 44.2 | 44.6 | 44.2 | 44.7 |
| ¹ Condylbasal length | 42.2 | 42.7 | 41.2 | 41.2 | 42.0 |
| ¹ Basal length | 39.5 | 40.1 | 38.8 | 38.4 | 39.0 |
| ¹ Zygomatic width | 22.6 | 22.5 | 21.5 | 21.4 | 22.2 |
| ¹ Interorbital width | 7.1 | 6.8 | 6.9 | 7.0 | 7.2 |
| ² Width of rostrum | 7.1 | 6.7 | 6.7 | 6.8 | 7.0 |
| ² Nasal length | 17.8 | 17.4 | 17.4 | 17.2 | 17.7 |
| ² Maximum width across paired nasals | 5.0 | 5.4 | 4.9 | 5.1 | 5.0 |
| ² Maximum width across paired parietals | 16.6 | 15.8 | 16.5 | 16.9 | 16.0 |
| ¹ Mastoid width | 16.0 | 16.1 | 15.7 | 15.8 | 16.2 |
| ² Interparietal length | 6.1 | 5.7 | 6.0 | 6.6 | 5.1 |
| ¹ Interparietal width | 11.6 | 11.2 | 11.6 | 11.2 | 11.8 |
| Zygomatic plate minimum width | 5.2 | 5.8 | 5.4 | 5.2 | 5.6 |
| ¹ Palatal length | 25.2 | 25.2 | 24.9 | 24.7 | 24.9 |
| ³ Diastema length | 13.2 | 13.6 | 13.9 | 13.6 | 13.2 |
| ¹ Anterior palatal foramen length | 6.6 | 6.5 | 6.0 | 5.8 | 6.4 |
| ¹ Anterior palatal foramina width | 2.5 | 2.8 | 2.5 | 2.6 | 2.7 |
| ² Palate width between anterointernal roots of M ¹ | 4.9 | 4.8 | 4.8 | 4.2 | 4.7 |
| ² Palate width between anterior roots of M ³ | 5.3 | 5.2 | 5.4 | 5.2 | 5.7 |
| ¹ Bulla length | 4.9 | 4.9 | 5.0 | 5.1 | 5.0 |
| ¹ M ¹⁻³ length (crowns) | 7.3 | 7.6 | 7.3 | 7.2 | 7.1 |
| ¹ M ¹⁻³ length (alveoli) | 8.1 | 8.2 | 8.3 | 7.8 | 8.0 |
| M ¹ length x width (crowns) | 3.4x2.3 | 3.8x2.1 | 3.6x2.2 | 3.4x2.3 | 3.3x2.3 |
| M ² length x width (crowns) | 2.7x2.1 | 2.5x2.0 | 2.8x2.2 | 2.8x2.1 | 2.6x2.3 |
| M ³ length x width (crowns) | 1.6x1.6 | 1.6x1.5 | 1.7x1.6 | 1.7x1.6 | 1.5x1.6 |
| 1 ¹ thickness | 2.5 | 2.5 | 2.3 | 2.3 | 2.4 |
| ² Length of mandibular ramus from tip of incisor | 31.1 | 32.3 | 30.5 | 30.0 | 30.8 |
| ² Height of condyle above ventral surface of mandibular ramus | 11.5 | 11.6 | 12.0 | 11.5 | 12.0 |
| M _{1,3} length (crowns) | 7.5 | 7.4 | 7.6 | 7.8 | 7.1 |
| M _{1,3} length (alveoli) | 7.8 | 8.3 | 7.7 | 8.1 | 7.9 |
| M ₁ length x width (crowns) | 3.2x2.2 | 3.3x1.9 | 3.1x2.1 | 3.1x2.0 | 3.1x2.1 |
| M ₂ length x width (crowns) | 2.5x2.1 | 2.2x1.7 | 2.6x2.1 | 2.7x2.1 | 2.5x2.1 |
| M ₃ length x width (crowns) | 1.9x1.7 | 1.9x1.4 | 1.8x1.6 | 1.8x1.6 | 2.0x1.6 |

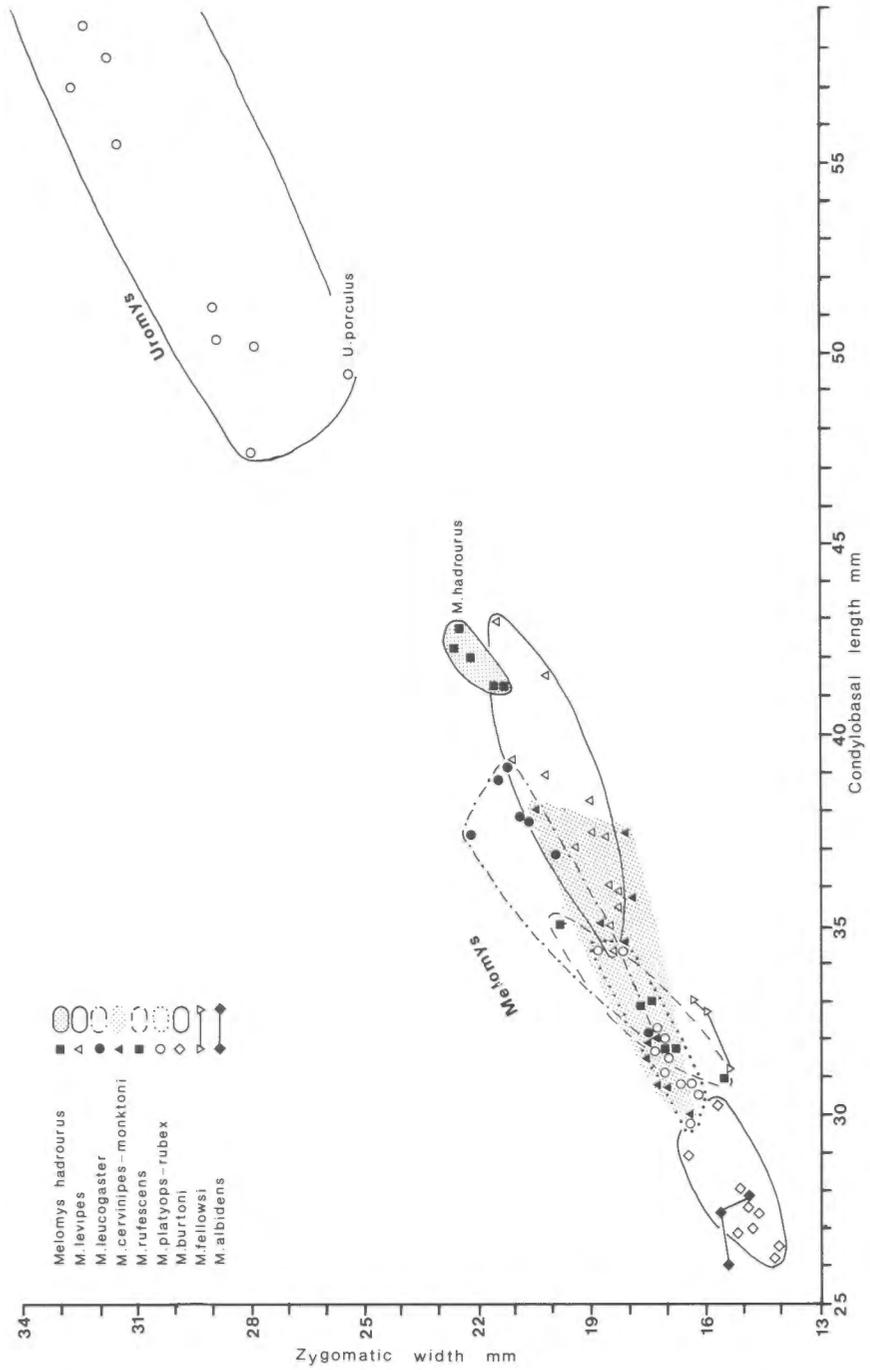


FIGURE 2. The relationship between condylobasal length and zygomatic width in *Uromys*, *Melomys hadrourus* and other *Melomys* species groups.

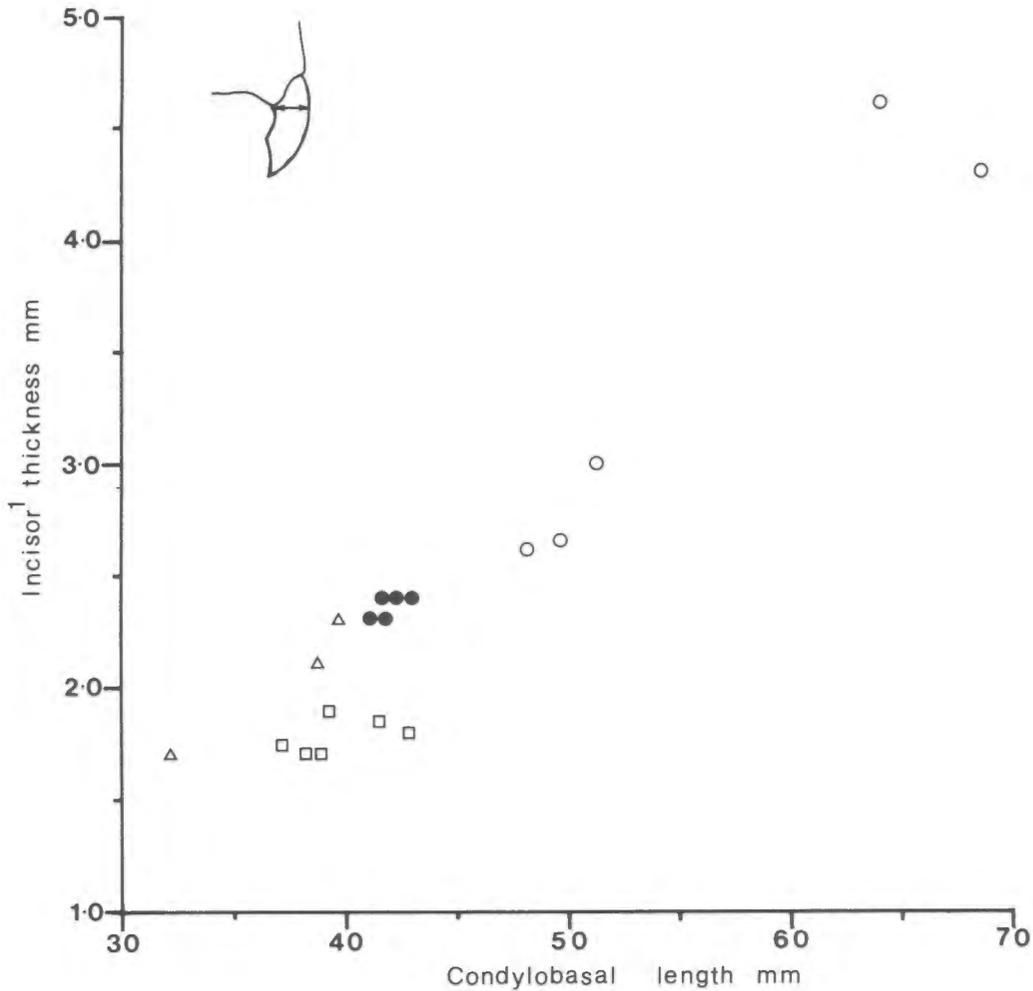


FIGURE 3. The relationship between condylobasal length and incisor thickness in *Melomys hadrourus* (●), *M. leucogaster* (△), *M. levipes* (□), and *Uromys* spp. (○). 1' measurements: *M. leucogaster latipes* AMNH 104273 (1.7'), *M. leucogaster* RNHL 25493 (2.1'), *M. l. leucogaster* AMNH 105723 (2.3), *M. levipes lanosus* BM 22.2.2.26 (1.7*), *M. levipes shawmayeri* BM 35.12.20.2 (1.7*), *M. l. levipes* BM 97.8.7.72 (1.75*), *M. l. levipes rattoides* BM 22.2.2.25 (1.8*), *M. levipes naso* BM 11.11.11.54 (1.85*), *M. levipes lorentzii* RNHL 25494 (1.9'), *Uromys caudimaculatus caudimaculatus* juv. QM JM3839 (2.6), *U.c. caudimaculatus* adult QM No. JM3840 (4.6), *U. porculus* BM 89.4.3.8 (2.65*), *U. sapientis* BM 2.5.1.4 (3.0*), *U. anak* QM JM3838 (4.3). Measurements supplied by P.D. Jenkins, BM (*); C. Smeenk, RNHL (+); C. Smeenk, RHNL (+); M.A. Lawrence, AMNH (').

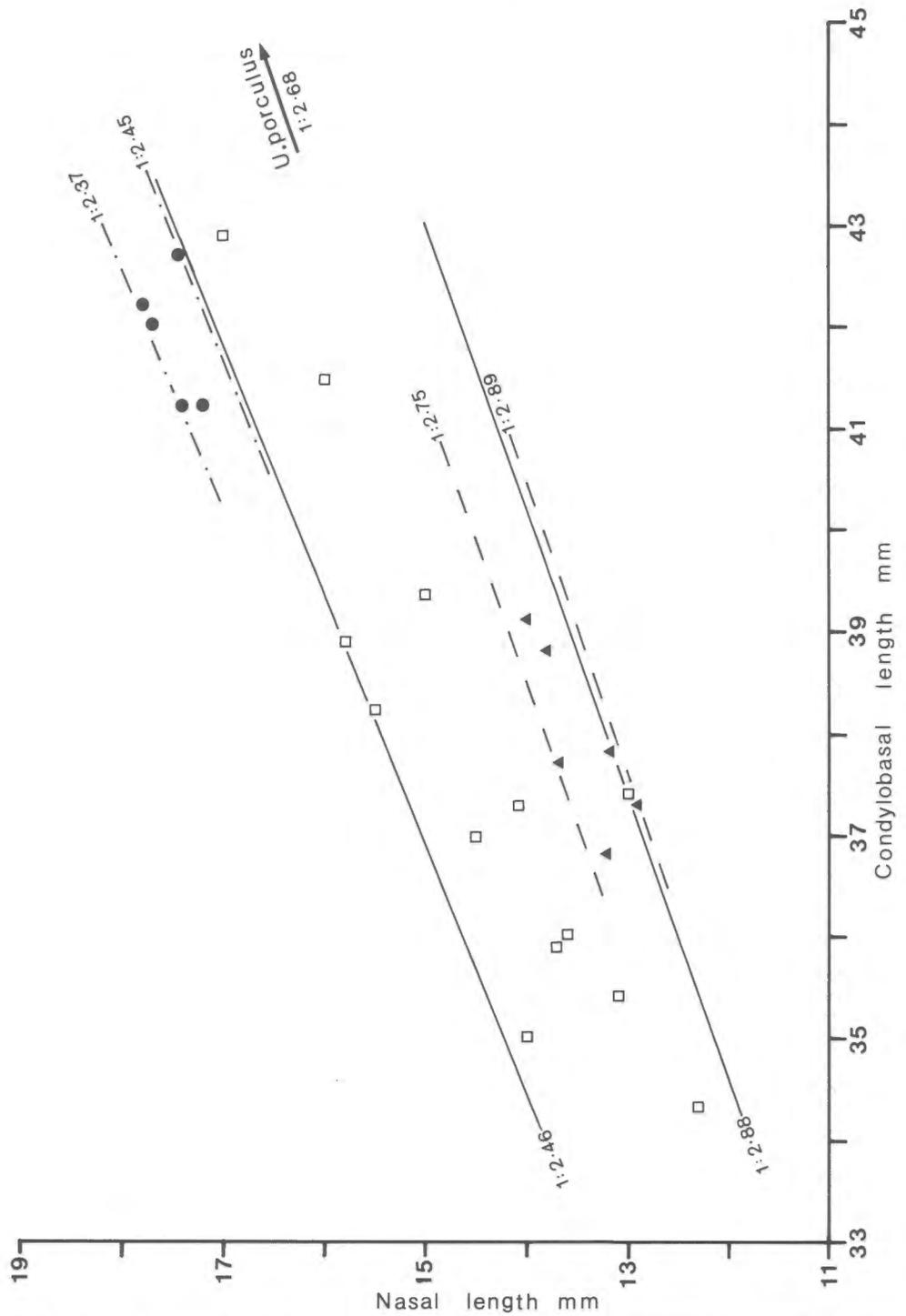


FIGURE 4. The relationship between nasal length and condylobasal length expressed as a ratio, in *Melomys hadrourus* (o), *M. levipes* (□), and *M. leucogaster* (Δ). The upper and lower limits of the ratio are shown.

PLATE 1

External features of *Melomys hadrourus* (QM JM504, holotype) from Thornton Peak, N.E. Queensland. A: pes, B: manus, C: tail, D: tail detail about one third from the base.

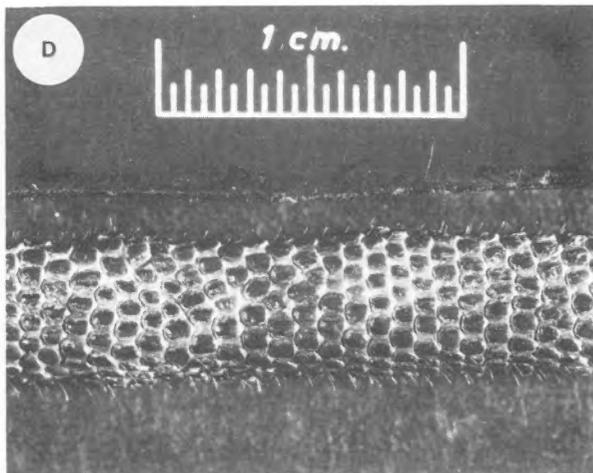
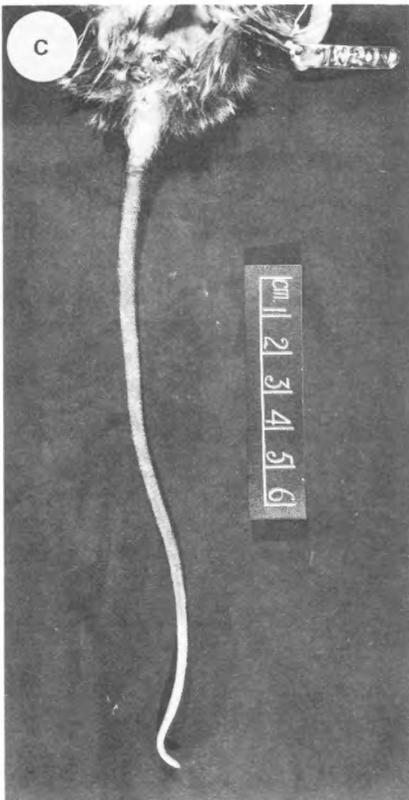
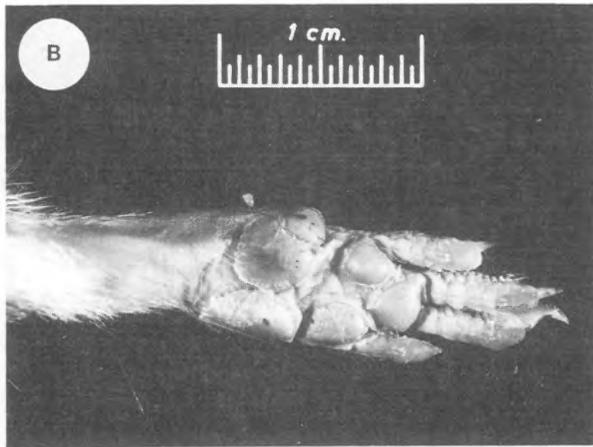
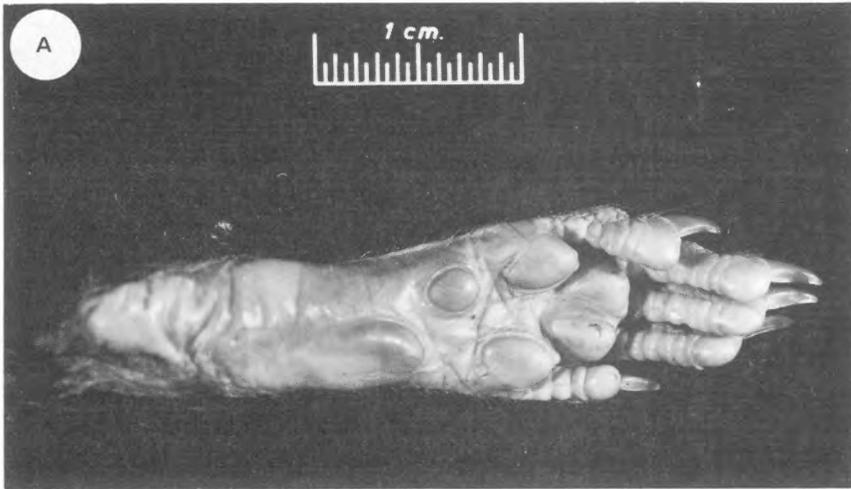


PLATE 2

Skull features of *Melomys hadrourus* (QM JM504, holotype) from Thornton Peak, N.E. Queensland. A-E: cranium and mandible, F: upper left molars, G: lower left molars.

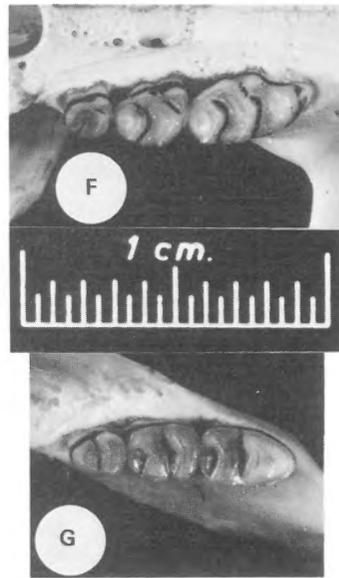
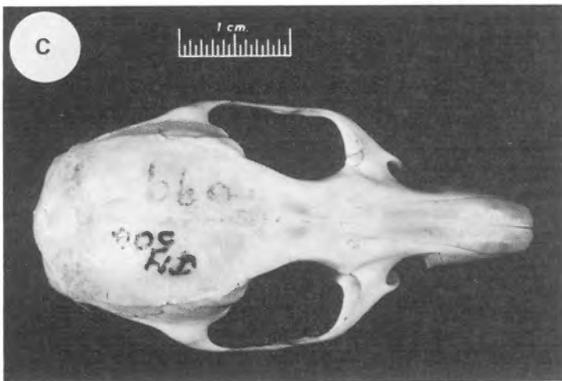
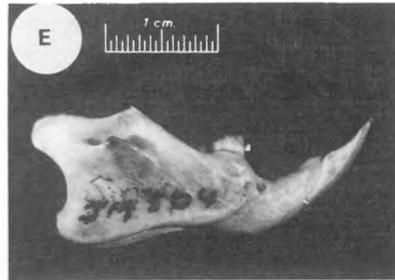
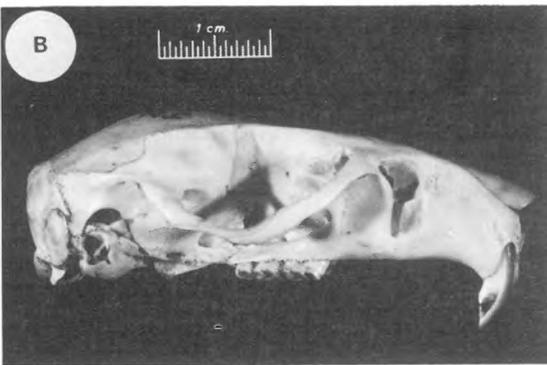
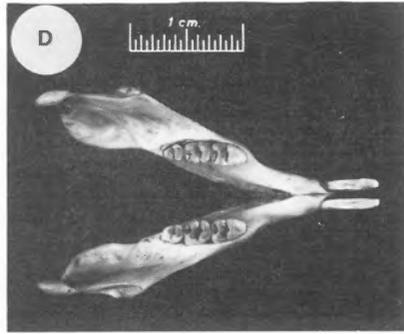
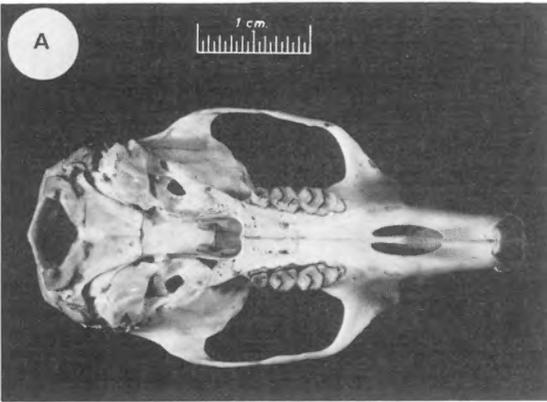


PLATE 3

Subadult male of *Melomys hadrourus* from the McDowall Range,
N.E. Queensland. The animal subsequently escaped.



PLATE 4

Type locality of *Melomys hadrourus*. Simple microphyll vine-fern thicket, Thornton Peak, N.E. Queensland.

