

Revision of the New Guinean Genus *Mallomys* (Muridae:Rodentia), with Descriptions of Two New Species from Subalpine Habitats

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ABSTRACT. Four species of *Mallomys* are recognised: *M. rothschildi* Thomas, 1898, with the subspecies *M. r. weylandi* Rothschild & Dollman, 1932 (syn. *M. argentata* Rothschild & Dollman, 1932); *M. aroaensis* (De Vis, 1907) with the subspecies *M. a. hercules* Thomas, 1912; *M. istapantap* n.sp., and *M. gunung* n.sp. *Mallomys rothschildi* is the smallest species. It is distinguished from the others by its relatively and often absolutely longer tail, short, diamond-shaped interparietal, and small cranial dimensions. It is found above about 1,500 m along the New Guinean Central Cordillera but is absent in the extreme southeast. It nests primarily in tree hollows. The subspecies *M. r. weylandi* is morphologically much more variable than any other *Mallomys* taxon. This variability may be the result of the absence of congeners within its range. *Mallomys aroaensis* is intermediate in size. Externally it differs from *M. rothschildi* except some individuals of *M. r. weylandi* in its lighter, grey colour, with long white-tipped guard hairs, and an ill-defined dorsal stripe. Cranially, its broad rostrum, inflated frontals, and great bizygomatic width relative to toothrow length distinguish it from all other species of *Mallomys*. It is found only in Papua New Guinea at altitudes from 1,100 m to about 2,450-3,850 m along the Central Cordillera, and to 3,600 m on the Huon Peninsula. It nests primarily in burrows. *Mallomys istapantap* n.sp. is the largest species, and appears to be restricted to subalpine grasslands and the upper montane forest fringe at 2,450-3,850 m in the east-central part of the New Guinean Central Cordillera. It is readily distinguished from all other species of *Mallomys* by its pale ears, and from *M. rothschildi* and *M. aroaensis* by its large size, short tail, large hypsodont molars, and numerous other cranial features (see diagnoses). It also nests in burrows. *Mallomys gunung* n.sp. resembles *M. istapantap* n.sp. externally, but lacks the pale ears of that species and differs markedly in cranial morphology (see diagnosis). Thus far it is known only from the western part of the Central Cordillera, from Mount Carstenz to Mount Wilhelmina, at altitudes of between 3,500 and 4,050 m.

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Species of the genus *Mallomys* are among the very largest of living murids. They are shaggy coated, herbivorous rats found only above 1,000 m along New Guinea's Central Cordillera and Huon Peninsula. Now recognised as part of the New Guinean "old endemic" radiation (Tate, 1951), their precise relationships with other genera remain unclear.

The taxonomy of the species of *Mallomys* has long been contentious. During the late nineteenth and early twentieth centuries a number of species names were proposed, all of which have been regarded more recently as referring to a single variable species. Thomas (1898) based *Mallomys rothschildi* upon a single very dark animal from between Mounts Musgrave and Scratchley in south-eastern New Guinea. In 1912 he proposed a second name, *M. hercules*, for a large, greyish animal from the Huon Peninsula. Unknown to Thomas, Charles De Vis of the Queensland Museum had in 1907 described and named a large grey murid *Dendrosminthus aroaensis*. This specimen came from the head of the Aroa River in south-eastern New Guinea. De Vis clearly had misgivings about naming this animal, as he wrote "...I feel hardly justified in running the risk of perpetrating a synonym, otherwise I should propose for it the name *Dendrosminthus aroaensis*..." (1907, p.11). Although such a "conditional name" would be unavailable were it proposed after 1961, prior to that date this does not prevent availability (see the Code, Art.15). Two additional taxa were described by Lord Walter Rothschild and Guy Dollman in 1932. They recognised both a blackish species (*M. weylandi*) and a grey one (*M. argentata*) from the Weyland Range in western New Guinea.

These matters rested until Rümmler (1938) reviewed the taxonomy of all of the New Guinean murids. He recognised but a single species of *Mallomys*, with three geographical subspecies: *M. r. rothschildi* from south-eastern New Guinea, *M. r. hercules* from the Bismarck Range and Huon Peninsula, and *M. r. weylandi* from the Weyland and Snow Mountains. Tate (1951), in his revision of the New Guinean murids, tentatively maintained Rümmler's three subspecies, but felt that *M. r. weylandi* and *M. r. rothschildi* were very similar, and only doubtfully distinct. He had examined both black and grey furred animals from the Bele River area of Irian Jaya, and had determined that these were simply colour morphs within a single species. Laurie (1952) and Laurie & Hill (1954) also recognised only a single species of *Mallomys* although Laurie (1952) had also noted the existence of both black and grey animals in collections from various parts of Papua New Guinea.

No further revisionary work was undertaken on the genus until this study. However, there were several indications from field workers that Rümmler's solution was not the correct one. Menzies & Dennis (1979), for example, mention that some native peoples from the central highlands of Papua New Guinea recognised two kinds of *Mallomys*. Various social anthropologists and geographers (e.g.

P. Dwyer, D. Hyndman, G. Hope, personal communication) have noticed a similar situation when collecting folk taxonomies and undertaking other work.

Our work on this problem began with the collection by two of us (T.F., K.A.) of *Mallomys* material, including tissues suitable for electrophoresis, from various localities throughout Papua New Guinea during 1981-1986. We had also noted considerable variation within available study material, and had tentatively recognised two species on the basis of cranial and external morphology. Electrophoretic results suggested that three groups could be recognised within our material from Papua New Guinea. This view was substantiated by a thorough examination of all relevant materials, and was extended through the recognition of a fourth species from Irian Jaya based on morphological criteria alone. Armed with this reappraisal of all *Mallomys* material held in Australian institutions, one of us (C.P.G.) travelled to London to examine type and other material held in the British Museum, and sought material in other European museums as well. We afterwards borrowed extensively from the holdings of *Mallomys* in the American Museum of Natural History.

The descriptions of the two new taxa proposed in this work were prepared by Flannery, Aplin and Groves, and only those authors should be cited as authorities for the names.

Materials and Methods

External measurements used in this study were taken from museum labels. In most cases they are known to have been taken on freshly dead individuals. Cranial measurements follow Musser (1970), except for toothrow length, which here has been taken as maximum crown length (rather than alveolar length). Colour nomenclature where capitalised follows Ridgway (1886).

Abbreviations are as follows: B.M. - British Museum (Natural History) mammal specimen. AM M - Australian Museum mammal specimen, AM F - Australian Museum fossil specimen. AMNH - American Museum of Natural History mammal specimen, CM - Australian National Wildlife Collection specimen. RM - Rijksmuseum van Natuurlijke Historie [Leiden] mammal specimen.

Results

Electrophoresis. Specimens of *Mallomys* sampled for electrophoretic analysis are listed in Table 1. Unfortunately, the sample size is small, as many *Mallomys* were received in the field long after death and their tissues had commenced to decay. Elsewhere it has been shown that only a few