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An overdue break-up of the genus *Pogonomys* Milne-Edwards, 1877 (Mammalia: Muridae) into two genera and the formal naming of five long overlooked species.

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ABSTRACT

An audit of all previously named species and synonyms within the putative genus of mainly New Guinean prehensile tailed mice *Pogonomys* Milne-Edwards, 1877 found a number of distinctive and divergent species that were not yet recognized by science.

Five species were recognized by most authorities as of early 2020.

A sixth species, *Mus mollipilosus* Peters and Doria, 1881, is resurrected from the synonymy of *Pogonomys macrourus* Milne-Edwards, 1877 on the basis of dentition and body form.

Five species and two other subspecies are formally named for the first time in this paper, including one newly named species based on a pair of Holocene age upper and lower left molar teeth collected in Irian Jaya.

The divergent lineage including *P. loriae* Thomas, 1897, *P. mollipilosus* (Peters and Doria, 1881), *P. fergussoniensis* Laurie, 1952 and four closely related taxa that are newly named are also placed in a newly erected and named genus *Macropogonomys gen. nov.*.

Scientific description of relevant forms is the critical and most important first step in ensuring the long-term conservation of these potentially vulnerable native forms as previously outlined by Hoser (2019a, 2019b).

Keywords: Mammals; Australia; New Guinea; Indonesia; Papua; Rat; Muridae; genus; *Pogonomys*; species; *championi*; *fergussoniensis*; *loriae*; *macrourus*; *mollipilosus*; *sylvestris*; *dryas*; new genus; *Macropogonomys*; new species; *maxhoseri*; *mickpughi*; *mippughae*; *aplini*; *sharonhoserae*; new subspecies; *blacki*; *gedyei*.

INTRODUCTION

The large, mainly from New Guinea genus of native rodents in the genus *Pogonomys* Milne-Edwards, 1877 has for many years been known to have underestimated species-level diversity.

These are iconic rodents on the basis of their relatively large size and long prehensile tail.

In the 30 years preceding the publication of this paper, a number of scientists had claimed to be working on revisions of this genus, with a view improving the taxonomy.

However this has not occurred and in the process of my own works on other species from the New Guinea bioregion over this same time frame, it has been abundantly clear that the genus *Pogonomys* is well overdue for a major taxonomic revision.

This need has become more urgent as it has become increasingly evident that introduced rodents that are commensally cohabiting with humans have been aggressively displacing *Pogonomys* within Australia's wet tropics and it is reasonable to infer a similar fate awaits New Guinea populations that are facing an ever increasing suite of human threats.

Almost without exception, these threats arise due to the pressure of increasing human populations throughout New Guinea combined with the indirect pressure of increasing human numbers outside of the immediate area, causing a drain on resources within the New Guinea area.

This drainage on resources manifests in mining operations, deforestation, introduced plants and animals, including predatory species such as cats and other rodents, pathogens, poisoned water sources and so on (see also Fusco *et al.* 2016; Hoser 1989, 1991, 1993, 1995, 1996, 2019a, 2019b, Wilson *et al.* 1992).

The basis of this paper was an audit of the genus and species-level taxonomy of the putative genus *Pogonomys*, following on from a number of studies either on this genus directly, or inadvertently including members of it as part of other studies.

This study assessed the current genus-level classification of all species and in finality assigned them to relevant species groups, with names also assigned to all, although I should hastily add that further species do await formal description, even after publication of this paper.

MATERIALS AND METHODS

Specimens of most species were inspected either live, dead or by way of quality photos of type material, as was all relevant and available literature.

This included all previous descriptions of taxa, including known synonyms as cited at the end of this paper.

Of particular relevance to this review, were phylogenetic and morphological studies that helped identify morphologically similar species and/or those most closely related.

Included in the audit were photos of species with good locality data and distribution maps from State Museums, based on specimens in their collections, noting that for many species, the historical distributions were very different to the extant distributions.

Where available and applicable, fossil specimens and records were also reviewed.

Past descriptions and synonymies were reviewed with a view to using available names for species groups if they had been properly proposed in the past.

Publications relevant to the taxonomic and nomenclatural conclusions in terms of the genus *Pogonomys sensu lato* including all descriptions of all known species, including all known synonyms, include the following: Aplin and Opiang (2011), Aplin *et al.* (1993, 1999), Bannister *et al.* (1988), Baverstock *et al.* (1981), Blyth (1859), Breed and Ford (2007), Bryant (2013), Dennis and Menzies (1979), Dollman (1930), Ellerman (1941), Fill *et al.* (2013), Ford (2003, 2006), Flannery (1988, 1995a, 1995b), Fusco *et al.* (2016), Helgen (2007), Helgen *et al.* (2008), Laurie (1952), Laurie and Hill (1954), Lee (1995), Lidicker and Ziegler (1968), Menkhorst and Knight (2001), Milne-Edwards (1868, 1877), Musser (1981), Musser and Carleton (1993, 2005), Pacifici *et al.* (2013), Peters (1868), Peters and Doria (1881), Ride *et al.* (1999), Rothschild and Dollman (1933), Rowe *et al.* (2008), Rummler (1938), Smissen (2017), Steppan and Schenk (2017), Strahan (1988), Tate (1936, 1951), Tate and Archbold (1935), Taylor *et al.* (1982, 1985), Thomas (1895, 1896, 1888, 1897, 1904, 1908, 1920, 1921, 1922a, 1922b), Van Dyck (1986), Walker (1983), Watts and Aslin (1981), Wilson and Reeder (1993, 2005), Wilson *et al.* (1992), Winter and Whitford (1995), Ziegler (1982), and sources cited therein.

RESULTS

Phylogenetic studies, including that of Steppan and Schenk (2017) and others as cited by them all confirm that *Pogonomys sensu lato* can be readily divided into two main morphologically divergent lineages at the genus level.
One of these lineages is unnamed and so it is formally named within this paper for the first time.

The new genus *Macropogonomys gen. nov.* with the type species *Macropogonomys maxhoseri sp. nov.* includes all species associated with the better-known *Pogonomys loriae* Thomas, 1897.

These are the species with generally enlarged molars and of greater body size.

At the species level, a number of putative species within *Pogonomys sensu lato* were found to have divergent populations which had not been given taxonomic recognition.

Some of these populations had been previously flagged as divergent by earlier authors, but not named since and to that extent I cannot claim actual first recognition or discovery of the differences between all relevant populations, even though I am the first to formally name them.

Each new species is formally named as a new species on the basis of known morphological and/or genetic divergence.

Ignoring synonym names as listed in the previously listed references, there are six recognized species within *Pogonomys sensu lato* predating the publishing of this paper, which are agreed by myself and as follows:

Pogonomys macrourus Milne-Edwards, 1877 (type for genus)

P. championi Flannery, 1988

P. fergussoniensis Laurie, 1952

P. loriae Thomas, 1897

P. mollipilosus (Peters and Doria, 1881)

P. sylvestris Thomas, 1920

The species *P. loriae* Thomas, 1897, *P. fergussoniensis* Laurie, 1952 and *P. mollipilosus* (Peters and Doria, 1881) are the relevant species that are transferred to the new genus *Macropogonomys gen. nov.*, along with four other newly named species.

A new species associated with *P. sylvestris* Thomas, 1920 and the similar *P. championi* Flannery, 1988 is also formally named as *P. sharonhoserae sp. nov.*.

Mus mollipilosus Peters and Doria, 1881 (holotype specimen MSNG 3491, at The Museo Civico di Storia Naturale di Genova, Genoa, Italy), since placed in the genus *Pogonomys*, but herein transferred to *Macropogonomys gen. nov.* is treated as being a valid species associated with *Pogonomys loriae* Thomas, 1897 (also transferred to *Macropogonomys gen. nov.*) on the basis of dentition (large teeth, versus small in others in the genus) as reported by Helgen (2007) and Helgen *et al.* (2008).

Other authors including Musser and Carleton (1993, 2005) synonymised *P. mollipilosus* (as identified by them) with *P. macrourus* on the basis of where it was found, being a lowland area, with *P. loriae* (as identified by them) generally regarded as a species of the mid-to upper altitudes.

Dentition of the holotype of *Macropogonomys mollipilosus* excludes the possibility that it and *P. macrourus* are conspecific.

Because dorsal colouration of this form is radically different from that of the type form of *M. loriae* Thomas, 1897, including specimens from both east, west and north of where the holotype of *P. mollipilosus* was collected and also differs in colouration from Australian "*Pogonomys*" herein formally named as *M. maxhoseri sp. nov.*, all three are herein treated as different species, this being the only obvious conclusion available.

See also confirmation of this view, via mtDNA results in Bryant (2013) at page 265 or via a second analysis on page 267.

M. mollipilosus is separated from *M. loriae* by having a face of the same colour to body, not one that is slightly lighter and by being of a reddish-brown on the dorsum, versus being a slaty grey colour with just a tinge of buff.

M. maxhoseri sp. nov. has been treated in the literature as *M. mollipilosus* (e.g. Dennis and Menzies 1979, or Strahan 1988) but differs from that species on the basis of colouration and biology. *M. mollipilosus* and the distantly related *P. macrourus* are superficially similar in that they both have brilliant light rufous fur, versus not so in *M. maxhoseri sp. nov.*.

M. mollipilosus and *M. maxhoseri sp. nov.* are both more stout in build than *P. macrourus.*

M. mollipilosus and *M. macrourus* are both inhabitants of lowland regions, including drier habitats, whereas *M. maxhoseri sp. nov.* is strictly confined to wetter uplands and immediately adjacent rainforests, although this does include lowland rainforests.

The following taxa, *P. lepidus* Thomas, 1897, *P. lepidus huon*, Tate and Archbold, 1935 and

P. lepidus derimapa, Tate and Archbold, 1935 are all tentatively regarded as synonyms of *P. macrourus*, although I note that the putative Weyland Mountains taxon *P. lepidus derimapa* is larger and more robust than those east of there and may in fact warrant resurrection as a subspecies or species at a later time.

P. dryas Thomas, 1904, from not far north of Port Moresby, Papua New Guinea is regarded as a junior synonym of *M. loriae* with a type locality of being from not far south of the Papua New Guinea capital city.

Morphologically divergent species within the genus *Chiruromys* Thomas, 1888 (originally coined as a subgenus) are all accepted as valid and within the separate genus. These are: The Greater Tree Mouse, *Chiruromys forbesi* (Thomas, 1888), Lamia, *Chiruromys lamia* (Thomas, 1897) (with *Chiruromys kagi* Tate, 1951 treated herein as a junior synonym) and the Lesser Tree Mouse, *Chiruromys vates* (Thomas, 1908).

The species newly named in this paper are as follows:

M. maxhoseri sp. nov. is the species from north Queensland, Australia, which has been variously treated as *M. mollipilosus* (see above), which as a pair are separated from *M. loriae* and most closely associated species by not being blackish or extremely dark in dorsal colouration. *M. maxhoseri sp. nov.* and *M. mollipilosus* are separated from one another by fur colour as detailed in the descriptions in this paper. *M. maxhoseri sp. nov.* is further split into a total of three subspecies, that are reproductively isolated from one another by well known biogeographic barriers and morphologically divergent.

P. sharonhoserae sp. nov. is the name assigned to a western population until now treated as putative *P. sylvestris* from western New Guinea (Indonesia).

Macropogonomys mickpughi sp. nov. is the grey bellied taxon until now referred to as a form of *M. loriae* (now also *Macropogonomys gen. nov.*) from the Eastern Highlands region of New Guinea.

M. mippughae sp. nov. is a lighter coloured taxon until now referred to *P. loriae* (now also *Macropogonomys gen. nov.*) from the ranges in northern New Guinea.

M. aplini sp. nov. is a new taxon described from an upper and lower left molar teeth (2 in total) found in Western New Guinea with different dentition (tooth structure) to any currently known form. The bones are of Holocene age and the taxon may still be extant in the relevant part of Western New Guinea (Indonesia).

It is hoped that by formally naming the taxon, living specimens may yet be discovered and properly managed, before they otherwise get wiped out through the ongoing habitat destruction in the region.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spellings should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (ICZN).

In the unlikely event two or more newly named taxa are deemed to be the same by a first reviser, then the name to be used and retained is that which first appears in this paper by way of page priority and as listed in the abstract keywords.

Some material in descriptions for taxa may be repeated for other taxa in this paper and this is necessary to ensure each fully complies with the provisions of the *International Code of Zoological Nomenclature* (Fourth edition) (Ride *et al.* 1999) as amended online since.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 20 June 2020 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Unless otherwise stated explicitly, colour and other descriptions apply to living adult specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration or abnormal skin or fur reaction to chemical or other input.

Unless otherwise stated, all colour descriptions of species refer to outer fur colour and not skin.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species or subspecies has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

CONSERVATION

In terms of conservation of each population of each subgenus or species as described below, the relevant comments in Hoser (1989, 1991, 1993, 1995, 1996, 2019a and 2019b) apply.

Wildlife laws as currently enforced in Australia, Papua New Guinea and Indonesia, are not in a materially significant way enhancing the long-term survival prospects of any of the relevant species.

Over breeding of humans and the environmental problems associated with this overpopulation are by far the greatest long term threat to each and every relevant species, noting that already liberated feral pest species continue to cause ongoing stress and no doubt the decline of these species as detailed for similar species in Hoser (1991).

In line with the Australian Federal Government's "Big Australia" policy, that being to increase the human population of 25 million (2020), from 13 million in around 1970, to over 100 million within 100 years "so that we can tell China what to do", as stated by the former Prime Minister, Kevin Rudd in 2019 (Zaczek 2019), the human pressure on the relevant ecosystems has increased in line with the human populations nearby and will clearly continue to do so.

The situation in Indonesia and Papua New Guinea is no different.

MACROPOGONOMYS GEN. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:ECEE478B-A504-480A-909C-756B33D7E006

Type species: *Macropogonomys maxhoseri sp. nov.*

Diagnosis: Until now, species within the genus *Macropogonomys gen. nov.* have been treated as being within the putative genus *Pogonomys* Milne-Edwards, 1877, with a type species of *Pogonomys macrourus* Milne-Edwards, 1877.

Species within both these genera and the morphologically similar *Chiruromys* Thomas, 1888 (type species *Pogonomys forbesi* Thomas, 1888), that was originally conceived as a subgenus within *Pogonomys*, but in recent years has been treated as a separate full genus are separated from all other Muridae by the following unique suite of characters:

Skull with interorbital constriction apparent, and with rounded braincase; supraorbital ridges as a rule well developed. Rostrum long (e.g. *P. sylvestris* Thomas, 1920) to short (*P. forbesi* (Thomas, 1888) and others). Zygomatic plate and infraorbital foramen nearly of the specialized type found in *Crateromys* Thomas, 1895, but infraorbital foramen less narrowed than in that genus. Zygomata widely spreading. Bullae very small. Palate broad; incisive foramina shortened, and considerably in front of tooth row. Incisors usually broad and rather powerful.

Upper molars complex; the centre row of cusps the largest, but neither the inner nor the outer rows showing much sign of reduction. M.1 with ten cusps, including a strong T.7, and an extra outer posterior cusp; M.2 with nine cusps (only T.2 is suppressed); M.3 not much smaller than M.2, mostly trilaminate, and with no clear outer row. The pattern is evidently traceable even in old age, and wears down slowly. A small extra front cusp in front of foremost lamina of M.1 may be present. Lower teeth like *Chiropodomys* Peters, 1868, the outer subsidiary row of cusps very clear, nearly developing as an extra row, though not comparable to *Hapalomys* Blyth, 1859.

Mammae 1-2 = 6. Tail long, nearly naked, the hairs more or less vestigial; terminal portion above without scales, quite naked, transversely wrinkled, and obviously prehensile.

The scales of the rest of the tail not, as is usual in rodents, square or arranged in distinct rings, but more or less pentagonal or lozenge-shaped, and set in diagonal slanting series, somewhat like the dorsal scales of a snake. Hindfoot broad, of arboreal type, with the fifth digit elongated, but the hallux not opposable, or not fully so and bearing claw. Manus with D.3 rather shortened sometimes. Fur soft.

The genera *Macropogonomys gen. nov.* and *Pogonomys* are separated from the morphologically similar *Chiruromys* by having scales on the tail that are mosaic-formed, the apical edges not free and not jutting over the scales of the next row, versus scales of the tail with apical edges mostly formed into a rounded point, which juts over the scales of the next row (and terminal portion) more developed in *Chiruromys*. Premaxillar region of skull lower and longer (i.e. not "Squirrel-formed"), versus premaxillar region of skull shorter (i.e. "Squirrel-formed") with rostrum shortened, and zygomata more spreading in *Chiruromys.* Palatal foramina wider posteriorly than anteriorly, versus not narrowed in front in *Chiruromys.* Simple molars, M.3 more reduced posteriorly, the fourth transverse row merged with the third, versus molars tending to be more complex and fourth transverse row of M.3 usually not merged into the third row in *Chiruromys*.

Species within *Macropogonomys gen. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm) and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*) as well as the fact that the last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring of fur around the eye, often being black (versus wholly absent in *Pogonomys*, excluding the three very small grey bellied species within

Pogonomys).

Distribution: Known only from mainland New Guinea, including both Papua New Guinea and Irian Jaya (Indonesia), including ranges on the coast north of the central cordillera and northern Queensland, Australia.

Etymology: The name *Macropogonomys gen. nov.* is in reflection of the relatively large size of these species as adults as compared to the nominate genus *Pogonomys* Milne-Edwards, 1877 and the relatively large molar teeth in species within this morphologically similar and closely related genus.

Content: *Macropogonomys maxhoseri sp. nov.* (type species); *M. aplini sp. nov.*; *M. fergussoniensis* (Laurie, 1952); *M. loriae* (Thomas, 1897); *M. mickpughi sp. nov.*; *M. mippughae sp. nov.*.

MACROPOGONOMYS MAXHOSERI SP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:599FF21C-C3C6-435A-AC3A-A2CDF4B484BE

Holotype: A preserved female specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number JM407, collected from Lake Barrine, Eastern Atherton Tableland, Queensland, Australia, Latitude -17.25 S., Longitude 145.6333 E. This government-owned facility allows access to its holdings.

Paratype: A preserved female specimen at the CSIRO, Australian National Wildlife Collection, Canberra, ACT, Australia, specimen number M21828 collected from the Atherton Tableland, Queensland, Australia.

Diagnosis: *Macropogonomys maxhoseri sp. nov.* is the Australian species of putative *Pogonomys* Milne-Edwards, 1877 occurring in north-east Queensland. Until now, most authorities, including Bannister *et al.* (1988) and Strahan (1988) have treated this taxon as a population of *P. mollipilosus* (Peters and Doria, 1881), now also transferred to the new genus *Macropogonomys gen. nov.*.

M. maxhoseri sp. nov. as defined herein is also split into three regionally divergent populations, named as subspecies.

These are nominate *M. maxhoseri sp. nov.* known from the southern Wet Tropics of far north Queensland, Australia, generally north from Millaa Millaa Latitude -17.4667 S., Longitude 145.6667 E. in the south to Kuranda Latitude -16.8167 S., Longitude 145.6333 E. in the north with a centre of distribution on the Atherton Tableland.

M. maxhoseri blacki subsp. nov. is found in the northern Wet Tropics of far north Queensland, Australia, generally north of Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south to Shiptons Flat, Latitude -15.8 S., Longitude 145.25 E. in the north (being south of Cooktown).

M. maxhoseri gedyei subsp. nov. is known only from Iron Range, Latitude -12.7164 S., Longitude 143.3022 E. in far north Queensland.

All three subspecies are confined to rainforests and associated forested uplands.

All subspecies of *M. maxhoseri sp. nov.* are readily separated from the morphologically similar species *M. mollipilosus* and *Pogonomys macrourus* Milne-Edwards, 1877 by fur colour. Both *M. mollipilosus* and *Pogonomys macrourus* Milne-Edwards, 1877 are characterised by having more-or-less uniformly bright reddish-brown fur on the dorsum, which is not the case for any subspecies of *M. maxhoseri sp. nov.*.

Species within *Macropogonomys gen. nov.* including all subspecies of *M. maxhoseri sp. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*); last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys loriae (Thomas, 1897) and associated species are separated from *M. maxhoseri sp. nov.* by their larger average maximum adult size and more robust build (head-body length 150 mm versus 140 mm, tail length 215 mm versus 185 mm)(see below as well), and extremely enlarged molar teeth (versus enlarged but to a lesser degree in *M. maxhoseri sp. nov.*).

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring around the eye (versus wholly absent in *Pogonomys*).

Macropogonomys gen. nov. include all of *M. maxhoseri sp. nov.* (type species); *Macropogonomys loriae* (Thomas, 1897), *M. aplini sp. nov.*, *M. fergussoniensis* (Laurie, 1952), *M. mickpughi sp. nov.*, and *M. mippughae sp. nov.*.

The three other species within *Pogonomys*, and remaining in that genus, namely *P. championi* Flannery, 1988, *P. sharonhoserae sp. nov.* and *P. sylvestris* Thomas, 1920 are all separated from the other species in *Pogonomys* as well as *M. maxhoseri sp. nov.* (all subspecies) by having greyish fur on the venter as opposed to white.

Besides being separated from all other New Guinean *Pogonomys* by larger adult size (see above), *M. maxhoseri sp. nov.* of each subspecies are separated from the reddish-brown dorsally, white ventered species formerly placed in *Pogonomys*, namely *M. mollipilosus* and *Pogonomys macrourus* by colouration of fur in that they are not reddisj brown above.

Nominate *M. maxhoseri maxhoseri subsp. nov.* (defined herein as well as a nominate subspecies) has greyish fur with a brownish tinge on the sides. Fur on the flanks is not significantly lighter than on the dorsum. There is a significant amount of black both anterior to and posterior to the eye.

M. maxhoseri blacki subsp. nov. has brown fur with faint russet streaks on the upper flanks. Fur on the dorsum is also noticeably darker than on the lower flanks. There is a moderate amount of dark anterior and posterior to the eye.

M. maxhoseri gedyei subsp. nov. has yellowish brown fur all over the dorsum, becoming beige on the lower flanks, and without any faint russet streaks on the flanks. There is a moderate amount of dark anterior and posterior to the eye.

M. mollipilosus and *Pogonomys macrourus* differ from all forms of *M. maxhoseri sp. nov.* by having reddish brown fur on the dorsum and white on the belly.

M. maxhoseri maxhoseri sp. nov. of the nominate form is depicted in Strahan (1998) on page 439 at bottom.

Further specimens of the nominate form of *M. maxhoseri sp. nov.* (that is *M. maxhoseri maxhoseri subsp. nov.* formally named as a subspecies here as well explicitly) in life can be seen in images at:
https://www.flickr.com/photos/54876436@N08/15006605510/
and
https://www.flickr.com/photos/zimny_anders/50132548593/
Images of *M. maxhoseri blacki subsp. nov.* in life can be seen online at:
https://www.flickr.com/photos/ryanfrancis/22732918268/
and
https://www.flickr.com/photos/ryanfrancis/22759014229/
and
https://www.flickr.com/photos/elliotbudd/35404315791
and
https://www.flickr.com/photos/euprepiosaur/7463535064/

The holotype of *M. mollipilosus* is depicted in *Helgen et al*. (2008) on page 658 at top.

A photo of the type form of *M. loriae* can be found online at:
https://www.flickr.com/photos/144046509@N08/27552017576/

Other relevant information on this new species and its historical classification is given below.

Bannister *et al*. (1988) regarded Australian *Pogonomys* Milne-Edwards, 1877 as being of the species "*P. mollipilosus* (Peters and Doria, 1881)", with a type locality of southern New Guinea. This designation was agreed by Strachan (1988), although Strachan (1988) stated "the specific identity of the Australian population is in some dispute".

This contention has been repeated by other authors including Dennis and Menzies (1979), who synonymised the New Guinea type specimen of "*P. mollipilosus*" with the earlier named form *Pogonomys macrourus* Milne-Edwards, 1877, effectively meaning the Australian species may be of that form as well.

Dennis and Menzies (2009), also wrote: "However, the position is somewhat complicated by the recent discovery of *Pogonomys* in Northern Queensland (John Winter and Jack Mahoney, personal communication). We have been able to examine two of the Queensland specimens but could not include them in our computer programme. The possibility that *mollipilosus* is an Australian species occurring in New Guinea only in the lower Fly River region cannot be ignored."

Problems with this contention were raised by Helgen *et al*. (2008) who wrote:

"Few specimens of *Pogonomys* have been collected in the TransFly region of southern New Guinea, and the taxonomic status of *Pogonomys mollipilosus* has never been satisfactorily resolved. Dennis & Menzies (1979: 322) observed that "the possibility that *mollipilosus* is an Australian species occurring in New Guinea only in the lower Fly River region cannot be ignored", and Australian samples of *Pogonomys* have been explicitly discussed under the name *Pogonomys mollipilosus* (Winter & Whitford 1995), thus assumed to represent a distinct species occurring in Australia and the TransFly. Musser & Carleton (1993, 2005) believed that the holotype of *mollipilosus* to be a specimen of the widespread lowland New Guinea taxon *Pogonomys macrourus* and synonymized it accordingly, but the last revisionary treatment of *Pogonomys* that involved firsthand comparisons of the holotype of *mollipilosus* was the review published by Dennis & Menzies (1979).

Our own examination of the young holotype (Helgen 2007: 747) indicates that it is a larger-toothed rat compared to samples of *P. macrourus*, probably does not belong within the synonymy of that taxon as currently recognized (Musser & Carleton 2005), and possibly shows a closer morphological resemblance to the larger-bodied species *P. loriae*."

Wilson and Reeder (2005), wrote:

"We list five species of *Pogonomys*, another undescribed species is endemic to the Snow Mtns in Prov. of Papua (= Irian Jaya) (Musser and Lunde, in ms.), and there is possibly a seventh that has yet to be named occurring in NE coastal Queensland (in rainforests of Cape York Peninsula and farther south in the wet tropics between Cooktown and Townsville; Watts and Aslin, 1981, and Winter and Whitford, 1995). Mahoney and Richardson (1988:170) catalogued taxonomic, distributional, and biological references for the Australian sample, which was identified as *P. mollipilosus* by Watts and Aslin (1981) and reviewed under that name by Winter and Whitford (1995). The holotype of *mollipilosus*, however, was obtained near Daru on the south coast of the Trans-Fly region of S New Guinea and is an example of *P. macrourus*, which is known only from mainland New Guinea (see account of that species). The Australian *Pogonomys* has a much larger body and longer tail than does *P. macrourus* (compare measurements for the Australian sample listed in Winter and Whitford, 1995:643, with those of New Guinea *P. macrourus* given by Flannery, 1995a), dark brownish gray upperparts and pure white underparts (bright reddish brown dorsal fur in *P. macrourus*), and does not appear to represent *P. macrourus*. Its body size, tail length, and fur coloration recall the New Guinea *P. loriae*, a generally montane inhabitant (see account of that species), but it averages smaller in those external dimensions (contrast measurements listed by Winter and Whitford with those for *P. loriae* presented by Flannery, 1995a:316). Furthermore, it seems biogeographically implausable that *P. loriae* also occurs in NE Queensland. No other species of nonvolant mammal that is endemic to the Australian-New Guinea region exhibits such a distribution. The typically Australian species that also occur in New Guinea are known only from the Trans-Fly region, not the Central Cordillera or outlying mountain ranges (Norris and Musser, 2001). The Australian *Pogonomys* is most likely a separate species from the New Guinea representatives, and its alliance needs to be determined by careful comparison with samples of *P. macrourus* and *P. loriae*; at that time perhaps the holotype of *mollipilosus* should be reexamined."

Inspection by myself of high quality colour images of the holotype of *P. mollipilosus*, *P. macrourus* and Australian "*Pogonomys*" from the three biogeographic areas they are known to occur (south wet tropics, north wet tropics and Iron Range, all in north-east Queensland, Australia) led to the inescapable conclusion that each were separate taxa.

The basis of the genus-level classification is explained elsewhere, but is strongly supported by the molecular results of Bryant (2013), who used samples of *P. macrourus*, *P. championi, P. sylvestris*, *M. loriae* and *M. maxhoseri sp. nov.*.

Distribution: Nominate *M. maxhoseri sp. nov.* are known from the southern Wet Tropics of far north Queensland, Australia, generally north from Millaa Millaa Latitude -17.4667 S., Longitude 145.6667 E. in the south to Kuranda Latitude -16.8167 S., Longitude 145.6333 E. in the north with a centre of distribution on the Atherton Tableland.

M. maxhoseri blacki subsp. nov. is found in the northern Wet Tropics of far north Queensland, Australia, generally north of Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south to Shiptons Flat, Latitude -15.8 S., Longitude 145.25 E. in the north (being south of Cooktown).

M. maxhoseri gedyei subsp. nov. is known only from Iron Range, Latitude -12.7164 S., Longitude 143.3022 E. in far north Queensland, Austrlia.

Etymology: Named in honour of Max Hoser of Campbelltown, New South Wales, Australia, a first cousin of myself in recognition of assistances to this author in herpetological research in the 1960's and 1970's, in particular with regards to Australian agamid lizards.

MACROPOGONOMYS MAXHOSERI BLACKI SUBSP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:50DB6BCF-2425-41EA-B844-CBAAB8767921

Holotype: A preserved male specimen at the Australian Museum, Sydney, NSW, Australia, specimen number M.23119, collected from Bloomfield (Cooktown), Queensland, Australia, Latitude -5.8519 S., Longitude 145.3280 E. This government-owned facility allows access to its holdings.

Paratypes: A preserved male specimen at the Australian Museum, Sydney, NSW, Australia, specimen number M.23118, collected from Cedar Bay (Cooktown area), Queensland, Australia, Latitude -15.833 S., Longitude 145.366.

Five preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers JM5272, JM8501, JM14682, JM14683 and JM14684 collected at Shipton's Flat, (just south of Cooktown), Queensland, Australia, Latitude -15.8 S., Longitude 145.2666 E.

Diagnosis: *Macropogonomys maxhoseri sp. nov.* is the Australian species of *Pogonomys* Milne-Edwards, 1877 occurring in north-east Queensland. Until now, most authorities, including Bannister *et al*. (1988) and Strahan (1988) have treated this taxon as a population of *P. mollipilosus* (Peters and Doria, 1881), now also transferred to the new genus *Macropogonomys gen. nov.*.

M. maxhoseri sp. nov. as defined herein is also split into three regionally divergent populations, named as subspecies.

These are nominate *M. maxhoseri sp. nov.* known from the southern Wet Tropics of far north Queensland, Australia, generally north from Millaa Millaa Latitude -17.4667 S., Longitude 145.6667 E. in the south to Kuranda Latitude -16.8167 S., Longitude 145.6333 E. in the north with a centre of distribution on the Atherton Tableland.

M. maxhoseri blacki subsp. nov. is found in the northern Wet Tropics of far north Queensland, Australia, generally north of Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south to Shiptons Flat, Latitude -15.8 S., Longitude 145.25 E. in the north (being south of Cooktown).

M. maxhoseri gedyei subsp. nov. is known only from Iron Range, Latitude -12.7164 S., Longitude 143.3022 E. in far north Queensland.

All three subspecies are confined to rainforests and associated forested uplands.

All subspecies of *M. maxhoseri sp. nov.* are readily separated from the morphologically similar species *M. mollipilosus* and *Pogonomys macrourus* Milne-Edwards, 1877 by fur colour. Both *M. mollipilosus* and *Pogonomys macrourus* Milne-Edwards, 1877 are characterised by having more-or-less uniformly bright reddish-brown fur on the dorsum, which is not the case for any subspecies of *M. maxhoseri sp. nov.*.

Species within *Macropogonomys gen. nov.* including all subspecies of *M. maxhoseri sp. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*); last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys loriae (Thomas, 1897) and associated species are separated from *M. maxhoseri sp. nov.* by their larger average maximum adult size and more robust build (head-body length 150 mm versus 140 mm, tail length 215 mm versus 185 mm)(see below as well), and extremely enlarged molar teeth (versus enlarged, but to a lesser extent in *M. maxhoseri sp. nov.*).

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring around the eye (versus wholly absent in *Pogonomys*).

Macropogonomys gen. nov. include all of *M. maxhoseri sp. nov.* (type species); *Macropogonomys loriae*

(Thomas, 1897), *M. aplini sp. nov.*, *M. fergussoniensis* (Laurie, 1952), *M. mickpughi sp. nov.* and *M. mippughae sp. nov.*.

The three other species within *Pogonomys*, and remaining in that genus, namely *P. championi* Flannery, 1988, *P. sharonhoserae sp. nov.* and *P. sylvestris* Thomas, 1920 are all separated from the other species in *Pogonomys* as well as *M. maxhoseri sp. nov.* (all subspecies) by having greyish fur on the venter as opposed to white.

Besides being separated from all other New Guinean *Pogonomys* by larger adult size (see above), *M. maxhoseri sp. nov.* of each subspecies are separated from the reddish-brown dorsally, white ventered species formerly placed in *Pogonomys*, namely *M. mollipilosus* and *Pogonomys macrourus* by colouration of fur.

Nominate *M. maxhoseri sp. nov.* has greyish fur with a brownish tinge on the sides. Fur on the flanks is not significantly lighter than on the dorsum. There is a significant amount of black both anterior to and posterior to the eye.

M. maxhoseri blacki subsp. nov. has brown fur with faint russet streaks on the upper flanks. Fur on the dorsum is also noticeably darker than on the lower flanks. There is a moderate amount of dark anterior and posterior to the eye.

M. maxhoseri gedyei subsp. nov. has yellowish brown fur all over the dorsum, becoming beige on the lower flanks, and without any faint russet streaks on the flanks. There is a moderate amount of dark anterior and posterior to the eye.

M. mollipilosus and *P. macrourus* differ from all forms of *M. maxhoseri sp. nov.* by having reddish brown fur on the dorsum and white on the belly.

M. maxhoseri max sp. nov. of the nominate form is depicted in Strahan (1998) on page 439 at bottom.

Further specimens of the nominate form of *M. maxhoseri sp. nov.* (that is *M. maxhoseri maxhoseri subsp. nov.* formally named as a subspecies here as well explicitly) in life can be seen in images at:
https://www.flickr.com/photos/54876436@N08/15006605510/
and
https://www.flickr.com/photos/zimny_anders/50132548593/
Images of *M. maxhoseri blacki subsp. nov.* in life can be seen online at:
https://www.flickr.com/photos/ryanfrancis/22732918268/
and
https://www.flickr.com/photos/ryanfrancis/22759014229/
and
https://www.flickr.com/photos/elliotbudd/35404315791
and
https://www.flickr.com/photos/euprepiosaur/7463535064/

The holotype of *M. mollipilosus* is depicted in *Helgen et al.* (2008) on page 658 at top.

A photo of the type form of *M. loriae* can be found online at:
https://www.flickr.com/photos/144046509@N08/27552017576/

Other relevant information on this new species and its historical classification is given below.

Bannister *et al.* (1988) regarded Australian *Pogonomys* Milne-Edwards, 1877 as being of the species "*P. mollipilosus* (Peters and Doria, 1881)", with a type locality of southern New Guinea. This designation was agreed by Strachan (1988), although Strachan (1988) stated:
"the specific identity of the Australian population is in some dispute".

This contention has been repeated by other authors including Dennis and Menzies (1979), who synonymised the New Guinea type specimen of "*P. mollipilosus*" with the earlier named form *Pogonomys macrourus* Milne-Edwards, 1877, effectively meaning the Australian species may be of that form as well.

Dennis and Menzies (2009), also wrote:

"However, the position is somewhat complicated by the recent discovery of *Pogonomys* in Northern Queensland (John Winter and Jack Mahoney, personal communication). We have been able to examine two of the Queensland specimens but could not include them in our computer programme. The possibility that *mollipilosus* is an Australian species occurring in New Guinea only in the lower Fly River region cannot be ignored."

Problems with this contention were raised by Helgen *et al.* (2008) who wrote:

"Few specimens of *Pogonomys* have been collected in the TransFly region of southern New Guinea, and the taxonomic status of *Pogonomys mollipilosus* has never been satisfactorily resolved. Dennis & Menzies (1979: 322) observed that "the possibility that *mollipilosus* is an Australian species occurring in New Guinea only in the lower Fly River region cannot be ignored", and Australian samples of *Pogonomys* have been explicitly discussed under the name *Pogonomys mollipilosus* (Winter & Whitford 1995), thus assumed to represent a distinct species occurring in Australia and the TransFly. Musser & Carleton (1993, 2005) believed that the holotype of *mollipilosus* to be a specimen of the widespread lowland New Guinea taxon *Pogonomys macrourus* and synonymized it accordingly, but the last revisionary treatment of *Pogonomys* that involved firsthand comparisons of the holotype of *mollipilosus* was the review published by Dennis & Menzies (1979).

Our own examination of the young holotype (Helgen 2007: 747) indicates that it is a larger-toothed rat compared to samples of *P. macrourus*, probably does not belong within the synonymy of that taxon as currently recognized (Musser & Carleton 2005), and possibly shows a closer morphological resemblance to the larger-bodied species *P. loriae*."

Wilson and Reeder (2005), wrote:

"We list five species of *Pogonomys*, another undescribed species is endemic to the Snow Mtns in Prov. of Papua (= Irian Jaya) (Musser and Lunde, in ms.), and there is possibly a seventh that has yet to be named occurring in NE coastal Queensland (in rainforests of Cape York Peninsula and farther south in the wet tropics between Cooktown and Townsville; Watts and Aslin, 1981, and Winter and Whitford, 1995). Mahoney and Richardson (1988:170) catalogued taxonomic, distributional, and biological references for the Australian sample, which was identified as *P. mollipilosus* by Watts and Aslin (1981) and reviewed under that name by Winter and Whitford (1995). The holotype of *mollipilosus*, however, was obtained near Daru on the south coast of the Trans-Fly region of S New Guinea and is an example of *P. macrourus*, which is known only from mainland New Guinea (see account of that species). The Australian *Pogonomys* has a much larger body and longer tail than does *P. macrourus* (compare measurements for the Australian sample listed in Winter and Whitford, 1995:643, with those of New Guinea *P. macrourus* given by Flannery, 1995a), dark brownish gray upperparts and pure white underparts (bright reddish brown dorsal fur in *P. macrourus*), and does not appear to represent *P. macrourus*. Its body size, tail length, and fur coloration recall the New Guinea *P. loriae*, a generally montane inhabitant (see account of that species), but it averages smaller in those external dimensions (contrast measurements listed by Winter and Whitford with those for *P. loriae* presented by Flannery, 1995a:316). Furthermore, it seems biogeographically implausable that *P. loriae* also occurs in NE Queensland. No other species of nonvolant mammal that is endemic to the Australian-New Guinea region exhibits such a distribution. The typically Australian species that also occur in New Guinea are known only from the Trans-Fly region, not the Central Cordillera or outlying mountain ranges (Norris and Musser, 2001). The Australian *Pogonomys* is most likely a separate species from the New Guinea representatives, and its alliance needs to be determined by careful comparison with samples of *P. macrourus* and *P. loriae*; at that time perhaps the holotype of *mollipilosus* should be reexamined.”

Inspection by myself of high quality colour images of the holotype of *P. mollipilosus*, *P. macrourus* and Australian “*Pogonomys*” from the three biogeographic areas they are known to occur (south wet tropics, north wet tropics and Iron Range, all in north-east Queensland, Australia) led to the inescapable conclusion that each were separate taxa.

The basis of the genus-level classification is explained elsewhere, but is strongly supported by the molecular results of Bryant (2013), who used samples of *P. macrourus*, *P. championi, P. sylvestris*, *M. loriae* and *M. maxhoseri sp. nov.*.

Distribution: *M. maxhoseri blacki subsp. nov.* is found in the northern Wet Tropics of far north Queensland, Australia, generally north of Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south to Shiptons Flat, Latitude -15.8 S., Longitude 145.25 E. in the north (being south of Cooktown).

Nominate *M. maxhoseri sp. nov.* are known from the southern Wet Tropics of far north Queensland, Australia, generally north from Millaa Millaa Latitude -17.4667 S., Longitude 145.6667 E. in the south to Kuranda Latitude -16.8167 S., Longitude 145.6333 E. in the north with a centre of distribution on the Atherton Tableland.

M. maxhoseri gedyei subsp. nov. is known only from Iron Range, Latitude -12.7164 S., Longitude 143.3022 E. in far north Queensland.

Etymology: Named in honour of Shane Black of Mount Molloy, North Queensland, Australia, formerly of Sydney, New South Wales, Australia, in recognition of his services to herpetology, in particular with regards to his breeding of highly venomous snakes and publications of photos of little known vertebrate species from the Australian wet tropics and adjacent regions.

MACROPOGONOMYS MAXHOSERI GEDYEI SUBSP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:4711945D-D4B6-41A7-B67B-FD047D43C682

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number JM2354, collected from Gordon Creek, Iron Range, Queensland, Australia, Latitude -12.7163 S., Longitude 143.3022 E. This government-owned facility allows access to its holdings.

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number JM2355, collected from Gordon Creek, Iron Range, Queensland, Australia, Latitude -12.7163 S., Longitude 143.3022 E.

Diagnosis: *Macropogonomys maxhoseri sp. nov.* is the Australian species of *Pogonomys* Milne-Edwards, 1877 occurring in north-east Queensland. Until now, most authorities, including Bannister *et al.* (1988) and Strahan (1988) have treated this taxon as a population of *P. mollipilosus* (Peters and Doria, 1881), now also transferred to the new genus *Macropogonomys gen. nov.*.

M. maxhoseri sp. nov. as defined herein is also split into three regionally divergent populations, named as subspecies.

These are nominate *M. maxhoseri sp. nov.* known from the southern Wet Tropics of far north Queensland, Australia, generally north from Millaa Millaa Latitude -17.4667 S., Longitude 145.6667 E. in the south to Kuranda Latitude -16.8167 S., Longitude 145.6333 E. in the north with a centre of distribution on the Atherton Tableland.

M. maxhoseri blacki subsp. nov. is found in the northern Wet Tropics of far north Queensland, Australia, generally north of Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south to Shiptons Flat, Latitude -15.8 S., Longitude 145.25 E. in the north (being south of Cooktown).

M. maxhoseri gedyei subsp. nov. is known only from Iron Range, Latitude -12.7164 S., Longitude 143.3022 E. in far north Queensland.

All three subspecies are confined to rainforests and associated forested uplands.

All subspecies of *M. maxhoseri sp. nov.* are readily separated from the morphologically similar species *M.*

mollipilosus and *Pogonomys macrourus* Milne-Edwards, 1877 by fur colour. Both *M. mollipilosus* and *Pogonomys macrourus* Milne-Edwards, 1877 are characterised by having more-or-less uniformly bright reddish-brown fur on the dorsum, which is not the case for any subspecies of *M. maxhoseri sp. nov.*.

Species within *Macropogonomys gen. nov.* including all subspecies of *M. maxhoseri sp. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*); last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys loriae (Thomas, 1897) and associated species are separated from *M. maxhoseri sp. nov.* by their larger average maximum adult size and more robust build (head-body length 150 mm versus 140 mm, tail length 215 mm versus 185 mm)(see below as well), and extremely enlarged molar teeth (versus enlarged, but to a lesser extent in *M. maxhoseri sp. nov.*).

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring around the eye (versus wholly absent in *Pogonomys*).

Macropogonomys gen. nov. include all of *M. maxhoseri sp. nov.* (type species); *Macropogonomys loriae* (Thomas, 1897), *M. aplini sp. nov.*, *M. fergussoniensis* (Laurie, 1952), *M. mickpughi sp. nov.*, and *M. mippughae sp. nov.*.

The three other species within *Pogonomys*, and remaining in that genus, namely *P. championi* Flannery, 1988, *P. sharonhoserae sp. nov.* and *P. sylvestris* Thomas, 1920 are all separated from the other species in *Pogonomys* as well as *M. maxhoseri sp. nov.* (all subspecies) by having greyish fur on the venter as opposed to white.

Besides being separated from all other New Guinean *Pogonomys* by larger adult size (see above), *M. maxhoseri sp. nov.* of each subspecies are separated from the reddish-brown dorsally, white ventered species formerly placed in *Pogonomys*, namely *M. mollipilosus* and *P. macrourus* by colouration of fur.

Nominate *M. maxhoseri sp. nov.* has greyish fur with a brownish tinge on the sides. Fur on the flanks is not significantly lighter than on the dorsum. There is a significant amount of black both anterior to and posterior to the eye.

M. maxhoseri blacki subsp. nov. has brown fur with faint russet streaks on the upper flanks. Fur on the dorsum is also noticeably darker than on the lower flanks. There is a moderate amount of dark anterior and posterior to the eye.

M. maxhoseri gedyei subsp. nov. has yellowish brown fur all over the dorsum, becoming beige on the lower flanks, and without any faint russet streaks on the flanks. There is a moderate amount of dark anterior and posterior to the eye.

M. mollipilosus and *P. macrourus* differ from all forms of *M. maxhoseri sp. nov.* by having reddish brown fur on the dorsum and white on the belly.

M. maxhoseri max sp. nov. of the nominate form is depicted in Strahan (1998) on page 439 at bottom.

Further specimens of the nominate form of *M. maxhoseri sp. nov.* (that is *M. maxhoseri maxhoseri subsp. nov.* formally named as a subspecies here as well explicitly) in life can be seen in images at:
https://www.flickr.com/photos/54876436@N08/15006605510/
and
https://www.flickr.com/photos/zimny_anders/50132548593/

Images of *M. maxhoseri blacki subsp. nov.* in life can be seen online at:
https://www.flickr.com/photos/ryanfrancis/22732918268/
and
https://www.flickr.com/photos/ryanfrancis/22759014229/
and
https://www.flickr.com/photos/elliotbudd/35404315791
and
https://www.flickr.com/photos/euprepiosaur/7463535064/

The holotype of *M. mollipilosus* is depicted in *Helgen et al*. (2008) on page 658 at top.

A photo of the type form of *M. loriae* can be found online at:
https://www.flickr.com/photos/144046509@N08/27552017576/

Other relevant information on this new species and its historical classification is given below.

Bannister *et al.* (1988) regarded Australian *Pogonomys* Milne-Edwards, 1877 as being of the species "*P. mollipilosus* (Peters and Doria, 1881)", with a type locality of southern New Guinea. This designation was agreed by Strachan (1988), although Strachan (1988) stated:

"the specific identity of the Australian population is in some dispute".

This contention has been repeated by other authors including Dennis and Menzies (1979), who synonymised the New Guinea type specimen of "*P. mollipilosus*" with the earlier named form *Pogonomys macrourus* Milne-Edwards, 1877, effectively meaning the Australian species may be of that form as well.

Dennis and Menzies (2009), also wrote:

"However, the position is somewhat complicated by the recent discovery of *Pogonomys* in Northern Queensland (John Winter and Jack Mahoney, personal communication). We have been able to examine two of the Queensland specimens but could not include them in our computer programme. The possibility that *mollipilosus* is an Australian species occurring in New Guinea only in the lower Fly River region cannot be ignored."

Problems with this contention were raised by Helgen *et al.* (2008) who wrote:

"Few specimens of *Pogonomys* have been collected in the TransFly region of southern New Guinea, and the taxonomic status of *Pogonomys mollipilosus* has never been satisfactorily resolved. Dennis & Menzies (1979: 322) observed that “the possibility that *mollipilosus* is an Australian species occurring in New Guinea only in the lower Fly River region cannot be ignored”, and Australian samples of *Pogonomys* have been explicitly discussed under the name *Pogonomys mollipilosus* (Winter & Whitford 1995), thus assumed to represent a distinct species occurring in Australia and the TransFly. Musser & Carleton (1993, 2005) believed that the holotype of *mollipilosus* to be a specimen of the widespread lowland New Guinea taxon *Pogonomys macrourus* and synonymized it accordingly, but the last revisionary treatment of *Pogonomys* that involved firsthand comparisons of the holotype of *mollipilosus* was the review published by Dennis & Menzies (1979).

Our own examination of the young holotype (Helgen 2007: 747) indicates that it is a larger-toothed rat compared to samples of *P. macrourus*, probably does not belong within the synonymy of that taxon as currently recognized (Musser & Carleton 2005), and possibly shows a closer morphological resemblance to the larger-bodied species *P. loriae*.”

Wilson and Reeder (2005), wrote:

“We list five species of *Pogonomys*, another undescribed species is endemic to the Snow Mtns in Prov. of Papua (= Irian Jaya) (Musser and Lunde, in ms.), and there is possibly a seventh that has yet to be named occurring in NE coastal Queensland (in rainforests of Cape York Peninsula and farther south in the wet tropics between Cooktown and Townsville; Watts and Aslin, 1981, and Winter and Whitford, 1995). Mahoney and Richardson (1988:170) catalogued taxonomic, distributional, and biological references for the Australian sample, which was identified as *P. mollipilosus* by Watts and Aslin (1981) and reviewed under that name by Winter and Whitford (1995). The holotype of *mollipilosus*, however, was obtained near Daru on the south coast of the Trans-Fly region of S New Guinea and is an example of *P. macrourus*, which is known only from mainland New Guinea (see account of that species). The Australian *Pogonomys* has a much larger body and longer tail than does *P. macrourus* (compare measurements for the Australian sample listed in Winter and Whitford, 1995:643, with those of New Guinea *P. macrourus* given by Flannery, 1995a), dark brownish gray upperparts and pure white underparts (bright reddish brown dorsal fur in *P. macrourus*), and does not appear to represent *P. macrourus*. Its body size, tail length, and fur coloration recall the New Guinea *P. loriae*, a generally montane inhabitant (see account of that species), but it averages smaller in those external dimensions (contrast measurements listed by Winter and Whitford with those for *P. loriae* presented by Flannery, 1995a:316). Furthermore, it seems biogeographically implausable that *P. loriae* also occurs in NE Queensland. No other species of nonvolant mammal that is endemic to the Australian-New Guinea region exhibits such a distribution. The typically Australian species that also occur in New Guinea are known only from the Trans-Fly region, not the Central Cordillera or outlying mountain ranges (Norris and Musser, 2001). The Australian *Pogonomys* is most likely a separate species from the New Guinea representatives, and its alliance needs to be determined by careful comparison with samples of *P. macrourus* and *P. loriae*; at that time perhaps the holotype of *mollipilosus* should be reexamined.”

Inspection by myself of high quality colour images of the holotype of *P. mollipilosus*, *P. macrourus* and Australian “*Pogonomys*” from the three biogeographic areas they are known to occur (south wet tropics, north wet tropics and Iron Range, all in north-east Queensland, Australia) led to the inescapable conclusion that each were separate taxa.

The basis of the genus-level classification is explained elsewhere, but is strongly supported by the molecular results of Bryant (2013), who used samples of *P. macrourus*, *P. championi, P. sylvestris*, *M. loriae* and *M. maxhoseri sp. nov.*.

Distribution: *M. maxhoseri gedyei subsp. nov.* is known only from Iron Range, Latitude -12.7164 S., Longitude 143.3022 E. in far north Queensland.

Nominate *M. maxhoseri sp. nov.* are known from the southern Wet Tropics of far north Queensland, Australia, generally north from Millaa Millaa Latitude -17.4667 S., Longitude 145.6667 E. in the south to Kuranda Latitude -16.8167 S., Longitude 145.6333 E. in the north with a centre of distribution on the Atherton Tableland.

M. maxhoseri blacki subsp. nov. is found in the northern Wet Tropics of far north Queensland, Australia, generally north of Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south to Shiptons Flat, Latitude -15.8 S., Longitude 145.25 E. in the north (being south of Cooktown).

Etymology: *M. maxhoseri gedyei subsp. nov.* is named in honour of Andrew Gedye of Bentley Park, North Queensland, Australia, formerly of Cheltenham, New South Wales, in recognition of his services to herpetology, in particular with regards to the breeding of highly venomous snakes and rare pythons as well as providing information following an important field trip to Papua New Guinea.

MACROPOGONOMYS MICKPUGHI SP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:74E89A43-6FE8-4ADE-ADEC-94D356C57149

Holotype: A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number M15423 collected from Mount Erimbari, Chimbu (formerly Eastern Highlands) Province, Papua New Guinea. This government-owned facility allows access to its holdings.

Paratypes: Eleven preserved specimens in the Australian Museum, Sydney, New South Wales, Australia, specimen numbers M15415-15422 and M15424-15426 collected from Mount Erimbari, Chimbu (formerly Eastern Highlands) Province, Papua New Guinea.

Diagnosis: *Macropogonomys mickpughi sp. nov.*

currently only known from the Eastern Highlands region of New Guinea has long been treated as an unusual population of the well-known species *M. loriae* (Thomas, 1897).

M. loriae occurs in southern New Guinea, including as far east as Central Province (type locality) and west of there to include the Southern Highlands Province.

M. mickpughi sp. nov. is readily separated from *M. loriae* by its slightly smaller molar teeth (as compared to *M. loriae*), these still being enlarged relative to species of *Pogonomys* as defined in this paper, and a grey-furred belly, versus white or off-white in *M. loriae* and all other members of *Macropogonomys gen. nov.*.

Both *M. mickpughi sp. nov*. and *M. loriae* are readily separated from all other *Macropogonomys gen. nov.* by their large size (head-body length 150 mm, tail length 215 mm) and fur that is very dark brown to almost black in colour.

The morphologically similar *M. mippughae sp. nov.* from the Prince Alexander Mountains, Torricelli Mountains and Bewani Mountains near the north coast of New Guinea is separated from the two preceding species by having molars of similar size and configuration to *M. mickpughi sp. nov*., off-white-fur on the venter and greyish brown as opposed to dark brown fur on the upper body.

Both *M. mickpughi sp. nov*. and *M. loriae* have obviously darker hair on the crown of the head than the body, which is not the case in *M. mippughae sp. nov.*.

The molars of *M. mickpughi sp. nov*. and *M. mippughae sp. nov*., while reduced in size as compared to *M. loriae* are still noticeably enlarged, which is not the case in *Pogonomys* Milne-Edwards, 1877 species.

M. aplini sp. nov. is known only from a subfossil left upper first molar (M1) and a subfossil lower left first molar M1 of Holocene age retrieved from Kria Cave, West Papua, Indonesia. Kria Cave is located near Ayamaru Lakes, central Bird's Head Peninsula.

Depicted in Figure 21 of Aplin *et al*. (1999), the molar is clearly from a specimen of *Macropogonomys gen. nov.* because it is consistent with other species in the genus in that it lacks both an oblique crest between t1 and t5, and a basal, anterior cingular pocket between t2 and t3 (which if present would conform with known species of *Pogonomys*). The molar, while of reduced size as compared to that of normal adult *M. loriae*, thereby implying closeness to either *M. mickpughi sp. nov*. or *M. mippughae sp. nov*., has morphological similarities more like nominate *M. loriae* being the presence of distinct t1bis and t2bis and more anterior placement of t9 (which also excludes other named species in the genus *Macropogonomys gen. nov.*).

However, the fossil molar (M1) differs from the three other preceding species in lacking a cingular ridge between the posterobuccal cusplet and the base of the hypoconid, and in the greater size of the posterobuccal cusplet which directly abuts the anterobuccal cusplet.

In the other three species the two are discrete, but linked by a short narrow crest.

These features in combination clearly indicate a species new to science and while normally I'd be loathe to name a new species on the basis of a tooth, it is likely the species remains extant in this region and is quite likely under existential threat from rapid ongoing deforestation in the region.

By naming this taxon in particular, it is hoped that live specimens can be found and proper protection and management practices invoked to ensure its survival.

Obviously features such as fur colour and the like of *M. aplini sp. nov*. cannot currently be determined.

Until now, species within the genus *Macropogonomys gen. nov.* have been treated as being within the putative genus *Pogonomys*, with a type species of *Pogonomys macrourus* Milne-Edwards, 1877.

Species within both these genera and the morphologically similar *Chiruromys* Thomas, 1888 (type species *Pogonomys forbesi* Thomas, 1888), that was originally conceived as a subgenus within *Pogonomys*, but in recent years has been treated as a separate full genus are separated from all other Muridae by the following unique suite of characters:

Skull with interorbital constriction apparent and with rounded braincase; supraorbital ridges as a rule well developed. Rostrum long (e.g. *P. sylvestris* Thomas, 1920) to short (*P. forbesi* (Thomas, 1888) and others). Zygomatic plate and infraorbital foramen nearly of the specialized type found in *Crateromys* Thomas, 1895, but infraorbital foramen less narrowed than in that genus. Zygomata widely spreading. Bullae very small. Palate broad; incisive foramina shortened, and considerably in front of tooth row. Incisors usually broad and rather powerful.

Upper molars complex; the centre row of cusps the largest, but neither the inner nor the outer rows showing much sign of reduction. M.1 with ten cusps, including a strong T.7, and an extra outer posterior cusp; M.2 with nine cusps (only T.2 is suppressed); M.3 not much smaller than M.2, mostly trilaminate, and with no clear outer row. The pattern is evidently traceable even in old age, and wears down slowly. A small extra front cusp in front of foremost lamina of M.1 may be present. Lower teeth like *Chiropodomys* Peters, 1868, the outer subsidiary row of cusps very clear, nearly developing as an extra row, though not comparable to *Hapalomys* Blyth, 1859.

Mammae 1-2 = 6. Tail long, nearly naked, the hairs more or less vestigial; terminal portion above without scales, quite naked, transversely wrinkled, and obviously prehensile.

The scales of the rest of the tail not, as is usual in rodents, square or arranged in distinct rings, but more or less pentagonal or lozenge-shaped, and set in diagonal slanting series, somewhat like the dorsal scales of a snake. Hind foot broad, of arboreal type, with the fifth digit elongated, but the hallux not opposable, or not fully so and bearing claw. Manus with D.3 rather shortened sometimes. Fur soft.

The genera *Macropogonomys gen. nov.* and *Pogonomys* are separated from the morphologically similar *Chiruromys* by having scales on the tail that are mosaic-formed, the apical edges not free and not jutting over the scales of the next row, versus scales of the tail with apical edges mostly formed into a rounded point, which juts over the scales of the next row (and terminal portion more developed in *Chiruromys*. Premaxillar region of skull lower and longer (i.e. not “Squirrel-formed”), versus premaxillar region of skull shorter (i.e. “Squirrel-formed”) with rostrum shortened, and zygomata more spreading in *Chiruromys.* Palatal foramina wider posteriorly than anteriorly, versus not narrowed in front in *Chiruromys.* Simple molars, M.3 more reduced posteriorly, the fourth transverse row merged with the third, versus molars tending to be more complex, and fourth transverse row of M.3 usually not merged into the third row in *Chiruromys.*.

Species within *Macropogonomys gen. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*) as well as the fact that the last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring of fur around the eye, often being black (versus wholly absent in *Pogonomys*, excluding the three very small grey bellied species within *Pogonomys*).

Distribution: *M. mickpughi sp. nov.* is known only from the collection location of the type material, being Mount Erimbari, Chimbu (formerly Eastern Highlands) Province, Papua New Guinea. The taxon is presumably more widespread.

Etymology: The new species *M. mickpughi sp. nov.* is named in honour of Mick Pugh, of Geelong, Victoria, Australia, a former president of the Victorian Association of Amateur Herpetologists in honour

of his huge contribution to herpetology in Australia.

MACROPOGONOMYS MIPPUGHAE SP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:C22F5C04-76D6-45CA-8C91-93F6C742C67A

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number M.22802 collected from the base of Mount Fu, near Imonda, West Sepik Province, Papua New Guinea, Latitude -3.333 S., Longitude 141.15 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number M.27674 collected from near Utai, Torricelli Mountains, West Sepik Province, Papua New Guinea, Latitude -3.383 S., Longitude 141.583 E.

Diagnosis: Until now, *Macropogonomys mippughae sp. nov.* has been treated as a northern New Guinea population of *M. loriae* (Thomas, 1897).

Macropogonomys mickpughi sp. nov. also formally named in this paper is currently only known from the Eastern Highlands region of New Guinea and has also until now been treated as an unusual population of the well-known species *M. loriae* (Thomas, 1897).

M. loriae occurs in southern New Guinea, including as far east as Central Province (type locality) and west of there to include the Southern Highlands Province.

M. mickpughi sp. nov. is readily separated from *M. loriae* by its slightly smaller molar teeth (as compared to *M. loriae*) and a grey-furred belly, versus white or off-white in *M. loriae* and all other members of *Macropogonomys gen. nov.*.

Both *M. mickpughi sp. nov.* and *M. loriae* are readily separated from all other *Macropogonomys gen. nov.* by their large size (head-body length 150 mm, tail length 215 mm) and fur that is very dark brown to almost black in colour.

The morphologically similar *M. mippughae sp. nov.* from the Prince Alexander Mountains, Torricelli Mountains and Bewani Mountains near the north coast of New Guinea is separated from the two preceding species by having molars of similar size and configuration to *M. mickpughi sp. nov.*, off-white-fur on the venter and greyish brown as opposed to dark brown fur on the upper body.

Both *M. mickpughi sp. nov.* and *M. loriae* have obviously darker hair on the crown of the head than the body, which is not the case in *M. mippughae sp. nov.*.

The molars of *M. mickpughi sp. nov.* and *M. mippughae sp. nov.*, while reduced in size as compared to *M. loriae* are still noticeably enlarged, which is not the case in *Pogonomys* Milne-Edwards, 1877 species.

M. aplini sp. nov. is known only from a subfossil left upper first molar (M1) and a subfossil lower left first molar M1 of Holocene age retrieved from Kria Cave, West Papua, Indonesia. Kria Cave is located near Ayamaru Lakes, central Bird’s Head Peninsula.

Depicted in Figure 21 of Aplin *et al.* (1999), the molar is clearly from a specimen of *Macropogonomys gen. nov.* because it is consistent with other species in the genus in that it lacks both an oblique crest between t1 and t5, and a basal, anterior cingular pocket between t2 and t3 (which if present would conform with known species of *Pogonomys*). The molar, while of reduced size as compared to that of normal adult *M. loriae*, thereby implying closeness to either *M. mickpughi sp. nov.* or *M. mippughae sp. nov.*, has morphological similarities more like nominate *M. loriae* being the presence of distinct t1bis and t2bis and more anterior placement of t9 (which also excludes other named species in the genus *Macropogonomys gen. nov.*).

However, the fossil molar (M1) differs from the three other preceding species in lacking a cingular ridge between the posterobuccal cusplet and the base of the hypoconid, and in the greater size of the posterobuccal cusplet which directly abuts the anterobuccal cusplet.

In the other three species the two are discrete, but linked by a short narrow crest.

These features in combination clearly indicate a species new to science and while normally I’d be loathe to name a new species on the basis of a tooth, it is likely the species remains extant in this region and is quite likely under existential threat from rapid ongoing deforestation in the region.

By naming this taxon in particular, it is hoped that live specimens can be found and proper protection and management practices invoked to ensure its survival.

Obviously features such as fur colour and the like of *M. aplini sp. nov*. cannot currently be determined.

Until now, species within the genus *Macropogonomys gen. nov.* have been treated as being within the putative genus *Pogonomys*, with a type species of *Pogonomys macrourus* Milne-Edwards, 1877.

Species within both these genera and the morphologically similar *Chiruromys* Thomas, 1888 (type species *Pogonomys forbesi* Thomas, 1888), that was originally conceived as a subgenus within *Pogonomys*, but in recent years has been treated as a separate full genus are separated from all other Muridae by the following unique suite of characters:

Skull with interorbital constriction apparent, and with rounded braincase; supraorbital ridges as a rule well developed. Rostrum long (e.g. *P. sylvestris* Thomas, 1920) to short (*P. forbesi* (Thomas, 1888) and others). Zygomatic plate and infraorbital foramen nearly of the specialized type found in *Crateromys* Thomas, 1895, but infraorbital foramen less narrowed than in that genus. Zygomata widely spreading. Bullae very small. Palate broad; incisive foramina shortened, and considerably in front of tooth row. Incisors usually broad and rather powerful.

Upper molars complex; the centre row of cusps the largest, but neither the inner nor the outer rows showing much sign of reduction. M.1 with ten cusps, including a strong T.7, and an extra outer posterior cusp; M.2 with nine cusps (only T.2 is suppressed); M.3 not much smaller than M.2, mostly trilaminate, and with no clear outer row. The pattern is evidently traceable even in old age, and wears down slowly. A small extra front cusp in front of foremost lamina of M.1 may be present. Lower teeth like *Chiropodomys* Peters, 1868, the outer subsidiary row of cusps very clear, nearly developing as an extra row, though not comparable to *Hapalomys* Blyth, 1859.

Mammae 1-2 = 6. Tail long, nearly naked, the hairs more or less vestigial; terminal portion above without scales, quite naked, transversely wrinkled, and obviously prehensile.

The scales of the rest of the tail not, as is usual in rodents, square or arranged in distinct rings, but more or less pentagonal or lozenge-shaped, and set in diagonal slanting series, somewhat like the dorsal scales of a snake. Hindfoot broad, of arboreal type, with the fifth digit elongated, but the hallux not opposable, or not fully so and bearing claw. Manus with D.3 rather shortened sometimes. Fur soft.

The genera *Macropogonomys gen. nov.* and *Pogonomys* are separated from the morphologically similar *Chiruromys* by having scales on the tail that are mosaic-formed, the apical edges not free and not jutting over the scales of the next row, versus scales of the tail with apical edges mostly formed into a rounded point, which juts over the scales of the next row (and terminal portion more developed in *Chiruromys*. Premaxillar region of skull lower and longer (i.e. not "Squirrel-formed"), versus premaxillar region of skull shorter (i.e. "Squirrel-formed") with rostrum shortened, and zygomata more spreading in *Chiruromys.* Palatal foramina wider posteriorly than anteriorly, versus not narrowed in front in *Chiruromys.* Simple molars, M.3 more reduced posteriorly, the fourth transverse row merged with the third, versus molars tending to be more complex, and fourth transverse row of M.3 usually not merged into the third row in *Chiruromys.*.

Species within *Macropogonomys gen. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*) as well as the fact that the last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring of fur around the eye, often being black (versus wholly absent in *Pogonomys*, excluding the three very small grey bellied species within *Pogonomys*).

Distribution: *M. mippughae sp. nov.* is believed to occur in the Prince Alexander Mountains, Torricelli Mountains and Bewani Mountains in northern New Guinea both on the PNG and Indonesian sides.

Etymology: The new species *M. mippughae sp. nov.* is named in honour of Mip Pugh, of Geelong, Victoria, Australia, wife of former president of the Victorian Association of Amateur Herpetologists, Mick Pugh in honour of her huge contribution to herpetology in Australia including by breeding massive numbers of Agamid lizards and educating many others likewise.

MACROPOGONOMYS APLINI SP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:24DFFC50-D295-4AAF-A5AF-65CCFFB3DDB5

Holotype: A preserved left upper molar tooth (M1) at the western Australian Museum, Perth, Western Australia, Australia, specimen number WAM 98.7.41, collected from Kria Cave, located near Ayamaru Lakes, central Bird's Head Peninsula, Papua. Indonesia, Latitude 1.2667 S., Longitude 132.2000 E. This government-owned facility allows access to its holdings.

Paratype: A preserved left lower molar tooth (M1) at the western Australian Museum, Perth, Western Australia, Australia, specimen number WAM 98.7.42 collected from Kria Cave, located near Ayamaru Lakes, central Bird's Head Peninsula, Papua. Indonesia, Latitude 1.2667 S., Longitude 132.2000 E.

Diagnosis: The species formally named herein as *Macropogonomys aplini sp. nov.* had been known to be new to science since originally discovered by Ken Aplin, but the formal naming of this taxon did not occur because of Ken Aplin's unexpected death from cancer in January 2019. Hence this formal description herein. *M. aplini sp. nov.* was originally identified by Aplin *et al.*

(1999) as being a species similar to putative *M. loriae* (Thomas, 1897). However that species as previously understood has also been divided in this paper.

Until now, *Macropogonomys mippughae sp. nov.* has been treated as a northern New Guinea population of *M. loriae* (Thomas, 1897).

Macropogonomys mickpughi sp. nov. also formally named in this paper is currently only known from the Eastern Highlands region of New Guinea and has also until now been treated as an unusual population of the well-known species *M. loriae* (Thomas, 1897).

M. loriae occurs in southern New Guinea, including as far east as Central Province (type locality) and west of there to include the Southern Highlands Province.
M. mickpughi sp. nov. is readily separated from *M. loriae* by its slightly smaller molar teeth (as compared to *M. loriae*) and a grey-furred belly, versus white or off-white in *M. loriae* and all other members of *Macropogonomys gen. nov.*.

Both *M. mickpughi sp. nov.* and *M. loriae* are readily separated from all other *Macropogonomys gen. nov.* by their large size (head-body length 150 mm, tail length 215 mm) and fur that is very dark brown to almost black in colour.

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Both *M. mickpughi sp. nov.* and *M. loriae* have obviously darker hair on the crown of the head than the body, which is not the case in *M. mippughae sp. nov.*.

The molars of *M. mickpughi sp. nov.* and *M. mippughae sp. nov.*, while reduced in size as compared to *M. loriae* are still noticeably enlarged, which is not the case in *Pogonomys* Milne-Edwards, 1877 species.

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However, the fossil molar (M1) differs from the three other preceding species in lacking a cingular ridge between the posterobuccal cusplet and the base of the hypoconid, and in the greater size of the posterobuccal cusplet which directly abuts the anterobuccal cusplet.

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Species within both these genera and the morphologically similar *Chiruromys* Thomas, 1888 (type species *Pogonomys forbesi* Thomas, 1888), that was originally conceived as a subgenus within *Pogonomys*, but in recent years has been treated as a separate full genus are separated from all other Muridae by the following unique suite of characters:

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The scales of the rest of the tail not, as is usual in rodents, square or arranged in distinct rings, but more or less pentagonal or lozenge-shaped, and set in diagonal slanting series, somewhat like the dorsal scales of a snake. Hindfoot broad, of arboreal type, with the fifth digit elongated, but the hallux not opposable, or not fully so and bearing claw. Manus with D.3 rather shortened sometimes. Fur soft.

The genera *Macropogonomys gen. nov.* and *Pogonomys* are separated from the morphologically similar *Chiruromys* by having scales on the tail that are mosaic-formed, the apical edges not free and not jutting over the scales of the next row, versus scales of the tail with apical edges mostly formed into a rounded point, which juts over the scales of the next row (and terminal portion more developed in *Chiruromys*. Premaxillar region of skull lower and longer (i.e. not "Squirrel-formed"), versus premaxillar region of skull shorter (i.e. "Squirrel-formed") with rostrum shortened, and zygomata more spreading in *Chiruromys.* Palatal foramina wider posteriorly than anteriorly, versus not narrowed in front in *Chiruromys.* Simple molars, M.3 more reduced posteriorly, the fourth transverse row merged with the third, versus molars tending to be more complex, and fourth transverse row of M.3 usually not merged into the third row in *Chiruromys.*.

Species within *Macropogonomys gen. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*) as well as the fact that the last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.*

Macropogonomys gen. nov. are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring of fur around the eye, often being black (versus wholly absent in *Pogonomys*, excluding the three very small grey bellied species within *Pogonomys*).

Distribution: *M. aplini sp. nov.* is known only from the type material from Kria Cave, located near Ayamaru Lakes, central Bird's Head Peninsula, Papua. Indonesia, Latitude 1.2667 S., Longitude 132.2000 E. It is presumed to occur in nearby areas of the Bird's Head Peninsula, Papua. Indonesia, where suitable habitat remains. Deforestation and human population growth are both rampant in the area and combined with the threats posed by introduced pest species such as dogs, cats and other rodent taxa, the continued existence of this species (if still extant) is far from assured.

Etymology: Named in honour of the late Ken Aplin of Canberra, Australia, previously of Perth Western Australia, Australia in recognition of his many contributions to herpetology and mammalogy.

When meeting Ken Aplin once at the CSIRO Australian National Wildlife Collection to inspect various specimens, Aplin told me about how in 1998 he was approached by Wolfgang Wüster, a Welsh based academic (see Hoser 2015a-f), to audit species of venomous elapid snakes I had formally named in 1998 (see Hoser 1998a, 1998b) and if possible do a DNA analysis of them to prove that the species I had discovered were in fact "non-taxa".

Wüster even published this bald assertion, that all species named by myself (Raymond Hoser) in the period to year 2000 were all "non-taxa (Wüster *et al.* 2001).

Aplin did the task he was asked to do and contrary to Wüster's wishes, confirmed that in each and every case, the taxa named by myself in 1998 (six species) were all in fact valid.

The same request was made in terms of species of elapid snake and python I named in year 2000 (Hoser 2000a, 2000b) and again the results were the same. Likewise for a request made to refute the taxonomy of my pythons paper in year 2004 (see Hoser 2004)

In 1999, Aplin did in fact publish a paper confirming the validity of the species *Acanthophis wellsei* Hoser, 1998 (see Aplin and Donnellan, 1999), which enraged Wüster.

Wüster then harassed Aplin to not publish similar confirmatory works in terms of the other taxa.

However Aplin did get colleagues Rawlings *et al.* (2008) to publish confirmation of the validity of the snake genus *Broghammerus* Hoser, 2004.

Noting that *Broghammerus* happened to be the best known and longest snake on the planet, the Reticulated Python and from 2008 onwards everyone else in herpetology was ignoring Wüster's unscientific rants against "Hoser Taxonomy", Wüster became enraged and changed his line of attack.

He then decided to "dispense with the rules of the Code" his exact words, the "Code" being the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), which dictate the rules of naming species for all scientists worldwide (see also Wüster 2020).

Wüster did this, via his document Kaiser *et al.* (2013), actually published by Wüster himself a year prior via a SPAM email to thousands of herpetologists.

As with the "paper' he published in 2001 (Wüster *et al.* 2001), Wüster also author shopped this piece to get half a dozen other alleged co-authors, although in the original emails sent out by his friend Hinrich Kaiser (Kaiser 2012a), we know that the sole author of what became known as Kaiser *et al.* (2013), was none other than the evil scheming, Wolfgang Wüster himself.

Wüster and his cohort then using the doctrine of Kaiser *et al.* (2013), decided to engage in taxonomic vandalism and rename species and genera previously named by myself (Raymond Hoser). As of mid 2020 this totalled nearly 100 genera and species illegally renamed by Wüster and his cohort of thieves, including taxa named by 1800's greats such as John Edward Gray, Wilhelm Karl Hartwich Peters and Leopold Joseph Franz Johann Fitzinger.

A 2019 list of about 70 of the taxa illegally renamed by the Wüster gang of thieves can be found online at: http://www.smuggled.com/Taxonomic-vandalism-a-recent-list-of-illegally-coined-names.htm

or

http://www.smuggled.com/Taxonomic-vandalism-Wüster-gang-of-thieves-list-of-known-illegally-renamed-taxa-as-of-1-August-2019.pdf

The Wolfgang Wüster gang of thieves had been at war against the rules of the *International Code of Zoological*

Nomenclature (Ride *et al*. 1999) previously (see Hoser 2007), but fortunately the ICZN ruled against the thieves (see references to the ICZN cases in Hoser 2007).

Their more recent war cry manifesto known as "Kaiser *et al*. (2013)", although in fact written by Wolfgang Wüster (see Kaiser 2012a) as frequently amended (see also Kaiser 2012, 2012b, 2013, 2014a and 2014b) and the claims within it, have been discredited numerous times (e.g. Cogger (2014), Dubois (2014), Dubois *et al*. (2019), Eipper (2013), Hoser (2007, 2009, 2012a, 2012b, 2015a-f, 2016, 2019a-b), Mutton (2014a, 2014b), Shea (2013a-d), Thorpe (2013, 2014a, 2014b), Wellington (2013, 2014a, 2014b, 2016), Wells (2013, 2014) and sources cited therein).

Notwithstanding these setbacks the Wolfgang Wüster gang remain undeterred and continue to commit acts of internet trolling, running countless fake accounts online for peddling hatred and lies, as well as engaging in overt scientific fraud, property theft, assault, vandalism, money fraud, money laundering, rapes, child sex offences, trafficking of amphetamines, animal abuse and cruelty, wildlife scams, shooting people (yes, two of the group have been convicted of this) and other serious crimes (Supreme Court of Western Australia 2009, Hobbs 2010, Goodman 2019).

Some members of the group have been charged and jailed for various criminal acts, including for example David John Williams, convicted and fined $7,500 for animal cruelty and wildlife smuggling at the Cairns Magistrates Court, Damien Mark Harding jailed for child sex offences, Seth Pywell fined for his role in the shooting two people, Matthew Gatt fined $8,000 for the theft of a snake and Andrew Browne jailed for child sex offences, but the group ring leaders Wolfgang Wüster, Hinrich Kaiser, Mark O'Shea and Wulf Schleip have managed to avoid criminal charges to date.

Wolfgang Wüster and Mark O'Shea even post images of themselves committing crimes online, but have somehow managed to avoidgetting charged.

Aplin advised me that he'd been aggressively badgered by Wüster to illegally rename the species *Acanthophis wellsei* Hoser, 1998 and the other Death Adder species I had named in the 21 years to 2019 and to act illegally outside the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) to do so. To his credit, Ken Aplin did the honest and correct thing and refused the Wüster demand.

POGONOMYS SHARONHOSERAE SP. NOV.

LSIDURN:LSID:ZOOBANK.ORG:ACT:ACAE3FAE-C024-4B61-B5F6-CC1D366A503A

Holotype: A preserved specimen in the American Museum of Natural History, New York, USA, specimen number AMNH 150948 collected from Bele River, Irian Jaya, Indonesia, Latitude -4.12 S, Longitude 138.67 E. This facility allows access to its holdings.

Paratypes: 18 preserved specimens in the American Museum of Natural History, New York, USA, specimen numbers AMNH 150949-50, 151005-8, 151059-66, 151194-7 all collected from near Bele River, Irian Jaya, Indonesia 18 kilometers north of Lake Habbema, at 2200 meters.

Diagnosis: Until now *Pogonomys sharonhoserae sp. nov.* has been treated as a western population of *P. sylvestris* Thomas, 1920, with a type locality of Rawlinson Mountains in Morobe Province, north-east Papua New Guinea.

P. sharonhoserae sp. nov. is readily separated from *P. sylvestris* by their larger size (adult head body length 120 mm, tail 175 mm, versus adult head body length 110 mm and tail length 160 mm in *P. sylvestris*) and drab grey dorsal colouration, with almost no brown, versus bright reddish "Auburn" brown in the type form of *P. sylvestris*.

Sides of *P. sharonhoserae sp. nov*. lack the well defined rufous colouration seen on the flanks in both *P. championi* Flannery, 1988 and *P. sylvestris.*

P. championi Flannery, 1988 the only other grey-bellied species in the genus is unique within its genus in that the tail lightens, beginning from the distal end, with age. There is no clearly demarkated white tail tip, but rather the tail lightens imperceptably distally. In aged individuals almost the entire tail can be ivory in colour (Flannery 1988). It further differs from both *P. sharonhoserae sp. nov*. and *P. sylvestris* by lacking a distinct white tail tip (but rather having the pale distal portion of the tail intergrade into the darker base), in possessing more extensive white tipping on the ventral fur, and in being strongly rufescent on dorsum as well as the sides of the body.

The three preceding species are further separated from all other *Pogonomys* Milne-Edwards, 1877 and *Macropogonomys gen. nov.* (until now treated as species in the genus *Pogonomys*) by the following suite of characters: Medium species with slaty bases to the belly hairs. Fur long, soft, and fine. General colour above is darkish; under surface greyish; the hairs broadly slaty basally with creamy whitish tips. Hands and feet are pale buffy in colour. Tail pale brown, its fine sparse hairs are whitish in colour.

The skull slender in build, of standard murine proportions without enlarged molars. The muzzle is not shortened and the zygomata are not abruptly thrown outwards. Nasals long and narrow. Supraorbital edges more parallel than usual, not strongly divergent posteriorly, the edges themselves are square but not ridged. Palatal foramina short (modified from Thomas, 1920).

Until now, species within the genus *Macropogonomys gen. nov.* have been treated as being within the putative genus *Pogonomys* Milne-Edwards, 1877, with a type species of *Pogonomys macrourus* Milne-Edwards, 1877.

Species within both these genera and the morphologically similar *Chiruromys* Thomas, 1888 (type species *Pogonomys forbesi* Thomas, 1888), that was originally conceived as a subgenus within *Pogonomys*, but in recent years has been treated as a separate full genus are separated from all other Muridae by the following unique suite of characters:

Skull with interorbital constriction apparent, and with rounded braincase; supraorbital ridges as a rule well developed. Rostrum long (e.g. *P. sylvestris* Thomas, 1920) to short (*P. forbesi* (Thomas, 1888) and others). Zygomatic plate and infraorbital foramen nearly of the specialized type found in *Crateromys* Thomas, 1895, but infraorbital foramen less narrowed than in that genus. Zygomata widely spreading. Bullae very small. Palate broad; incisive foramina shortened, and considerably in front of tooth row. Incisors usually broad and rather powerful.

Upper molars complex; the centre row of cusps the largest, but neither the inner nor the outer rows showing much sign of reduction. M.1 with ten cusps, including a strong T.7, and an extra outer posterior cusp; M.2 with nine cusps (only T.2 is suppressed); M.3 not much smaller than M.2, mostly trilaminate, and with no clear outer row. The pattern is evidently traceable even in old age, and wears down slowly. A small extra front cusp in front of foremost lamina of M.1 may be present. Lower teeth like *Chiropodomys* Peters, 1868, the outer subsidiary row of cusps very clear, nearly developing as an extra row, though not comparable to *Hapalomys* Blyth, 1859.

Mammae 1-2 = 6. Tail long, nearly naked, the hairs more or less vestigial; terminal portion above without scales, quite naked, transversely wrinkled, and obviously prehensile.

The scales of the rest of the tail not, as is usual in rodents, square or arranged in distinct rings, but more or less pentagonal or lozenge-shaped, and set in diagonal slanting series, somewhat like the dorsal scales of a snake. Hindfoot broad, of arboreal type, with the fifth digit elongated, but the hallux not opposable, or not fully so and bearing claw. Manus with D.3 rather shortened sometimes. Fur soft.

The genera *Macropogonomys gen. nov.* and *Pogonomys* are separated from the morphologically similar *Chiruromys* by having scales on the tail that are mosaic-formed, the apical edges not free and not jutting over the scales of the next row, versus scales of the tail with apical edges mostly formed into a rounded point, which juts over the scales of the next row (and terminal portion more developed in *Chiruromys*. Premaxillar region of skull lower and longer (i.e. not “Squirrel-formed”), versus premaxillar region of skull shorter (i.e. “Squirrel-formed”) with rostrum shortened, and zygomata more spreading in *Chiruromys.* Palatal foramina wider posteriorly than anteriorly, versus not narrowed in front in *Chiruromys.* Simple molars, M.3 more reduced posteriorly, the fourth transverse row merged with the third, versus molars tending to be more complex, and fourth transverse row of M.3 usually not merged into the third row in *Chiruromys*..

Species within *Macropogonomys gen. nov.* are separated from *Pogonomys* by their larger average maximum adult size and more robust build (head-body length 140-150 mm versus 120 mm, tail length 215-185 mm versus 170 mm), and noticeably enlarged molar teeth (versus not noticeably enlarged in *Pogonomys*) as well as the fact that the last 1-2 cm of tail has hair on it like on the body, versus not so in *Pogonomys.* *Macropogonomys gen. nov.* are further separated from *Pogonomys* by having a conspicuous to inconspicuous darker ring of fur around the eye, often being black (versus wholly absent in *Pogonomys*, excluding the three very small grey bellied species within *Pogonomys*).

Distribution: *P. sharonhoserae sp. nov.* is presently only definitively known from the type locality, but is likely to occur in nearby parts of the central cordillera in West Papua, Indonesia.

Etymology: The new species *P. sharonhoserae sp. nov.* is named in honour of Sharon Hoser of Perth, Western Australia in recognition of her services to herpetology in the 1960’s and 1970’s.

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CONFLICTS OF INTEREST

None.

SPECIES LIST

Pogonomys **Milne-Edwards, 1877**

Pogonomys macrourus **Milne-Edwards, 1877 (type species)**
P. championi **Flannery, 1988**
P. sharonhoserae sp. nov.
P. sylvestris **Thomas, 1920**

SPECIES LIST

Macropogonomys gen. nov.

Macropogonomys maxhoseri sp. nov. **(type species)**
M. aplini sp. nov.
M. fergussoniensis **(Laurie, 1952)**
M. loriae **(Thomas, 1897)**
M. mickpughi sp. nov.
M. mippughae sp. nov.
M. mollipilosus **(Peters and Doria, 1881)**

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