

The Rediscovery of the New Holland Mouse

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The Rediscovery in New South Wales (Ku-ring-gai Chase National Park and Port Stephens) of *Pseudomys novaehollandiae* (Waterhouse, 1843) (Rodentia: Muridae)

The New Holland mouse, *Pseudomys novaehollandiae* (Waterhouse, 1843) was named for three individuals, including two young, from Gould's collection, found together under a slab of bark at Yarrundi (Yarrandi), near Scone, Upper Hunter River Valley, New South Wales. Waterhouse does not give a depository for the three individuals; however, Gray (1843, p. 112), who lists them as a 'female, and two young (imperfect)', affirmed that they were in the British Museum. No further individuals are identified as *Pseudomys novaehollandiae* by Gray in his list. The skull of *P. novaehollandiae* later listed by Gray (1847, p. 38) and by Gerrard (1862, p. 165) as being in the British Museum is perhaps the one noted by Gray in his 1843 work and ascribed by him there to the specimen he called a female, although neither he nor Gerrard include it among those indicated by them to have been extracted from skins in the Museum collection. Because Waterhouse failed to nominate a holotype, the female of Gray's list was subsequently selected by Thomas (1921) as the lectotype of *Pseudomys novaehollandiae*.

Additional specimens of *P. novaehollandiae* from the same district as those described by Waterhouse, and others procured by Mr. Gilbert on the banks of the Gwydir River, New South Wales, are recorded by Gould (1856) as being 'now before me'. Later, Krefft (1864, p. 62) listed an adult specimen from 'New South Wales' as being in the Australian Museum collection. The only other work known to us which purports to record further modern material of *P. novaehollandiae* is by Brazenor (1936). In this he records as *P. novaehollandiae* a series of 27 individuals attributable to the Blandowski Expedition to the junction of the Murray and Darling Rivers in 1856-7. Twenty-five individuals (Nat. Mus. Vict. nos. C984-C1006, 21677-8) from this series have been examined (J.A.M.), and we agree with Troughton (1937) and Wakefield (1966) that they belong not to *P. novaehollandiae* but to *Pseudomys hermannsburgensis* (Waite, 1896). Some unregistered fragments in the National Museum of Victoria, which may represent parts of the missing two specimens, are listed by Wakefield (1966, pp. 386-7) as *Leggadina*

hermannsburgensis. We have examined these fragments and are unable to distinguish them from *Pseudomys hermannsburgensis*.

The lectotype, numbered both 1843.2.24.1 (skin and skull) and 1843.2.24.2 (skull), a skin and skull, both numbered 1856.12.3.2, from 'Australia' and purchased from Mr. Cuming, and the skin and skull of a juvenile individual accompanied by a label on which are recorded the locality New South Wales and collector's No. A but no registration number were the only specimens of the New Holland mouse found by one of us (J.A.M.) in the British Museum (Natural History) mammal collection in 1965. The lectotype and No. 1856.12.3.2 are identified in the British Museum (Natural History) mammal register as *Mus novaehollandiae*, while this name is included on the label with the juvenile specimen, No. A. Waterhouse's two young individuals are entered as Nos. 1843.2.24.3-4 in the same register as the lectotype and as specimens with these numbers could not be found, No. A, the skull of which was removed from the skin in 1965, is perhaps one of them. The date of collection of the lectotype (and possibly specimen No. A) might have been August 1840, as the skin label bears that date. Two further individuals are identified in the British Museum (Natural History) mammal register as *Mus novaehollandiae* but are young specimens of *Pseudomys gouldii* (Waterhouse, 1839).

Specimens of *P. novaehollandiae* from the banks or plains of the Gwydir River have not been located by us. Because one of the British Museum (Natural History) individuals misidentified as the New Holland mouse, No. 1856.10.28.4, is a Gould Collection specimen, attributable to Gilbert, from the Gwydir River plains, New South Wales, there must be some doubt regarding the accuracy of Gould's report of the species having been found in the environs of that river. Again, we are unable to trace the specimen listed by Krefft as *P. novaehollandiae* and cannot confirm that it was correctly identified by him. There is, however, one specimen of the New Holland mouse, No. M.65, in the Australian Museum mammal collection which has apparently remained unrecognized until now. This, a mounted skin and associated badly damaged skull, extracted from the skin since 1959, is accompanied by a label identifying it as '*Mus. sp.*' from the Richmond River, New South

Wales, and recording it as having been collected by and purchased from Mr. Cockerell. The date December, 1886 is included on the skin label.

Because authenticated records of the species having been sighted or collected since the middle of last century were unknown to him, Troughton (1965, pp. 301-2) described *P. novaehollandiae* as uncommon, although adding that its apparent rarity may be due to it being confused by country observers with the introduced house mouse, *Mus musculus* Linnaeus, 1758. Little attention has been paid in the past to collecting small mammals in the eastern highlands and coastal districts of New South Wales, and this too may help to explain why there are so few records of the New Holland mouse. Evidence that this species is extant in New South Wales and is not uncommon over part at least of its present range, despite the lapse of time since 1886 when Cockerell's specimen was perhaps collected, is provided by its discovery in Ku-ring-gai Chase National Park in December 1967 and at Port Stephens in February 1968.

The presence of *P. novaehollandiae* in Ku-ring-gai Chase National Park was determined when a specimen, caught by hand at night by Mr. G. Spencer, a Park Ranger, was forwarded to the Australian Museum for identification. This individual, an adult male, was collected on about 6 December 1967 at Long. 151° 16' E., Lat. 33° 36' S. (military grid reference 279483, Broken Bay Sheet, Zone 8, New South Wales, revised edition 1953, scale 1 : 63,360) as it was crossing the road leading to Commodore Heights on the Lambert Peninsula, and is now a spirit specimen and skull, No. M.8938, in the Australian Museum collections (Table 1). The Ku-ring-gai Chase occurrence has not yet been investigated and is known only from Mr. Spencer's specimen.

In February 1968 Mr. K. Keith of the CSIRO Division of Wildlife Research found that the species occurs commonly at Port Stephens. Specimens from there and details of habitat are being recorded by Messrs. K. Keith and J. Calaby in *CSIRO Wildl. Res.*

The known modern range of *Pseudomys novaehollandiae* extends from the Richmond River in north-eastern New South Wales to the Ku-ring-gai Chase National Park in the Sydney region. South of Sydney it is represented in superficial bone deposits at Wombeyan Caves in the central highlands, and Yarrangobilly Caves in the southern highlands, of New South Wales (Australian Museum Nos. F.53432-3) and is also present in bone deposits in the Buchan district of eastern Victoria (Wakefield, 1960, 1967). Nine mandibular rami (Queen Victoria Museum, Launceston No. 1968.1.5) from the floor of a limestone cave at Flowery Gully, near Launceston, Tasmania, and three isolated upper first molars (Q.V.M. No. 1968.1.6) found on the same cave floor as the nine mandibular specimens, might belong to *Pseudomys novaehollandiae* (Green, 1967, p. 3; Gill, 1968). Finally, the fragmentary specimens from bone deposits in south-western Victoria recorded by Wakefield (1963a, 1963b, 1964a, 1964b) as *Gyomys cf. novaehollandiae* and *cf. Gyomys novaehollandiae* have been examined (J.A.M.) and while these specimens

perhaps belong to the New Holland mouse confirmation of its presence in those deposits is required.

Prior to 1910, authors followed Waterhouse in placing *novaehollandiae* in *Mus*. In that year Thomas transferred *Mus novaehollandiae* to *Pseudomys* Gray, 1832 and selected it as the type species of *Gyomys*, one of three subgenera—*Thetomys*, *Leggadina*, *Gyomys*—proposed then by him for *Pseudomys*.

TABLE 1

Measurements (in mm.) of the lectotype (1843.2.24.1-2), and of the Ku-ring-gai Chase National Park (M.8938) and Richmond River (M.65) individuals, of *Pseudomys novaehollandiae* (Waterhouse, 1843)

Except for the length of M¹⁻³ of the lectotype the measurements of the paired skull structures are for the right members in Nos. 1843.2.24.1-2 and M.8938 and for the left members in No. M.65. Measurements for length of M¹⁻³ do not include the roots

Measurement	1843.2.24.1-2 ¹	M.8938 ²	M.65 ³
Head and body	76	80	—
Tail	About 51	—	—
Hind foot	19½	21	—
Ear (from notch)	—	15	—
Maximum length of skull ..	—	25.2	—
Condylbasal length	—	22.4	—
Basioccipital length	—	20.5	—
Bizygomatic width	—	12.1	—
Interorbital width	3.6	3.3	3.7 approx.
Nasal length measured from anterior extremity of nasal to posterior extremity of internasal suture	> 6.7	8.9	8.2 approx.
Maximum width across nasals	2.5	2.4	2.3
Maximum width across parietals	11.3	11.3	—
Interparietal length measured from posterior extremity of interparietal suture to posterior extremity of interparietal	—	2.4	—
Width across interparietal between parieto-occipital points	—	6.8	—
Minimum width across zygomatic plate	2.5	2.5	—
Palatal length	11.9	12.4	11.5 approx.
Length of diastema	6.2	6.5	5.9 approx.
Length of incisive foramen ..	5.2	5.6	5.1 approx.
Width across incisive foramina ..	1.6	1.5	—
Width of palate between antero-internal roots of M ¹ ..	2.4	2.5	—
Length of bulla	3.9	4.1	—
Length of M ¹⁻³	3.9	4.0	4.1

¹ Female—authority Gray (1843). Skin and skull both damaged; skin measurements taken from Waterhouse's original description and converted to mm. Tate (1951, p. 359) also gives measurements. British Museum (Natural History) collection.

² Male. Tip of tail missing. Weight 17 grams. Australian Museum collection.

³ Sex unknown. Skin in poor condition and cannot be satisfactorily measured. Skull badly damaged. Australian Museum collection.

Iredale and Troughton (1934) later raised these subgenera to generic rank. Dental characters alone were used by Thomas to distinguish *Gyomys* from *Leggadina*. The absence of an anterior cingular cusp on M¹ and molar laminae of the 'usual murine shape

and position' in *Gyomys* were contrasted by him with the presence of the cusp and the tilting backwards internally of the molar laminae, in proportion to the development of the cusp, in *Leggadina*. Although Thomas' lectotype of *Pseudomys novaehollandiae* and the British Museum (Natural History) juvenile, No. A, do not have an anterior cingular cusp on M¹, it is present in the third British Museum (Natural History) individual, No. 1856.12.3.2, and in Cockerell's specimen. The Ku-ring-gai Chase specimen has this cusp well developed on the left M¹ but represented on the right M¹ only by a slight swelling, while it is present in some of the Port Stephens individuals and absent in others. Again, specimens of *P. novaehollandiae* have the molar laminae tilted backwards internally to the same extent as do specimens of *Mus hermannsburgensis* Waite. The latter species is placed by Thomas (1910) in *Leggadina* and because some individuals of *Mus novaehollandiae* Waterhouse fall within his definition of that taxon, Thomas' subgeneric name *Gyomys* has not been used here by us for the New Holland mouse.

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