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A REVISION OF THE AUSTRALIAN JERBOA MICE.

C. W. Brazenor, National Museum.

Plates V, VI, and VII.

The following revision of Australian Jerboa Mice is based on detailed examination of 140 specimens in the National Museum, Melbourne, and 35 in the Western Australian Museum, Perth, for the loan of which I am indebted to Mr. L. Glauert, B.A., F.G.S., Curator.

Identification of species is by no means simple since they closely resemble one another and published diagnostic descriptions are often inadequate.

The skulls of all are strikingly similar, and some minor variations are certainly not constant specifically.

For instance Oldfield Thomas (4) states that the mesopterygoid fossa of *cervinus* is broadened in front, but according to Wood Jones (8) the mesial pterygoid processes of *cervinus* are "practically straight": in the present series both shapes are found (see fig. 1). In describing *fuscus*, Wood Jones (8)

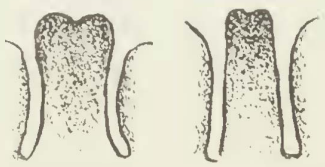

Fig. 1. Variation of mesopterygoid fossae in *N.* cervinus (Gould).

says "the skull differs from that of *cervinus* in possessing palatal foramina which do not extend backwards past the anterior edge of the first molar tooth." Eight skulls of *cervinus* were examined for this character; in three the palatal foramina extend past the outer edge of M¹, in three others they reach as far as this point, and in two they do not reach it.

All available skulls of various species were arranged in sequence according to the width of the palatal foramina, from the most open to the most closed; the result was a meaningless jumble.

Such characters are therefore not reliable, and, though not without regret, they have been discarded in this paper.

The angle of inclination of incisor teeth for any one species is also variable. Oldfield Thomas records this angle in his diagnoses of the various species as the "incisive index," but he

did not define the meaning of the term nor explain his method of measurement. For this reason the angles of inclination of incisor teeth in all available specimens were measured during this investigation on a definite system and the results are noted. "Index of incisors" or "incisor index" used in this paper is the angle between two lines, one drawn through the centre of the external auditory meatus to the most anterior point where, in a true profile, the incisor joins the alveolar border; and the other from the latter point through the cutting edge of the tooth. (Fig. 2.)

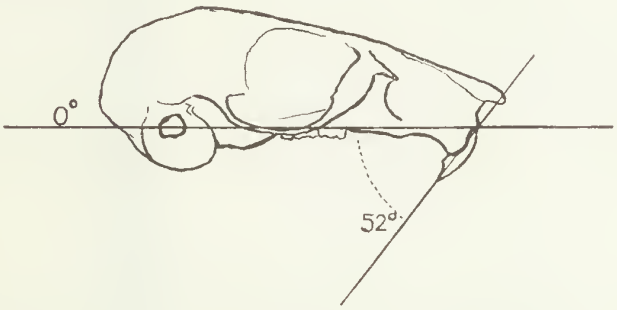

Fig. 2. Angle quoted as index of incisors.

Ears are measured from the notch at the base of the concha to the extreme tip of the ear. These and other measurements are tabulated at the end of the paper.

Ridgway's system for names of colours is used (*Colour Standards and Nomenclature*).

All Australian Jerboa Mice, together with other Australian rodents, were included in the genus *Hapalotis* (Lichtenstein, 1829) until 1892, when J. D. Ogilby (1) found that the name was pre-occupied; he therefore replaced it by *Conilurus*, a name proposed by W. Ogilby in 1838. In 1898, E. R. Waite (2) in describing material collected on the Horne Expedition, separated the Jerboa Mice from the genus *Conilurus* on account of the specialisation of the pes, and erected two new genera, *Thylacomys* and *Podanomalus*, based on the presence or absence of a gular pouch; he described the pouch as a rather shallow depression lined with fine hair, with the lower border thickened and of —·— shape. Waite (3) found that *Thylacomys* was a pre-occupied name and changed it in 1900 to *Ascopharynx*. Oldfield Thomas (4) in 1906 revised the classification and he was not prepared to accept the generic importance of the gular pouch; at the same time he revived the name *Notomys* (Lesson, 1842). In 1921, in revising the genus *Notomys*, he said (6) that the throat-pouch described by Waite would seem to be a skin-gland. Wood Jones (8) in 1925 reinstated Waite's name,

Ascopharynx, for pouched forms; in a later paper (9) he described the gular pouch as a little skin pocket, lined by thick hairs, which is situated on the ventral surface of the neck and opens forwards.

Examination of the National Museum material shows that the gular pouch is lined with specialised solid hair quite unlike the normal body hair (fig. 3). In some of the pouchless forms

a. *b.*

Fig. 3. Hair of *N. cervinus*: *a* from gular glandular area, *b* from chest.

the same part of the gular area is clothed with a patch of similar solid hairs, indicating a like glandular structure; this is confirmed by G. Bourne's investigation of the microscopic structure published in this Memoir. The expression "gular pouch" has therefore been discarded in this paper in favour of "gular glandular area." All species with a gular glandular area are placed in the genus *Notomys*.

Two species examined have no gular glandular area, but the male (and not the female) has an oval, slightly swollen pre-sternal gland between the fore-legs. No trace of a pre-sternal gland was found in any specimen having a gular glandular area. All species with a pre-sternal gland have been placed in the genus *Podanomalus*.

The fact that Thomas and Waite neither investigated the structure of the gular hair nor, apparently, discovered the chest-gland of *longicaudatus*, causes rather an involved situation in synonomy; it is clear, however, that Waite's *Podanomalus* has priority.

Family **MURIDAE** Grey 1821.

Subfamily **Murinae** Baird 1857.

Genus NOTOMYS Lesson.

Notomys, Less., N. Tabl. R. A. Mamm., p. 129, 1842 ; Thomas, Ann. Mag. Nat. Hist. (7), XVII, p. 83, 1906.

Thylacomys, Waite, Proc. Roy. Soc. Vict., X, p. 121, 1898 (nec Blythe, 1841).

Ascopharynx, Waite, Ann. Mag. Nat. Hist. (7), V, p. 223, 1900 ; Wood Jones, Rec. Sth. Aust. Mus., III, p. 1, 1925.

General characters murine. Teeth practically as in *Mus*, no posterior internal cusp on molars. Skull with anterior edge of zygoma root deeply concave. Hind feet lengthened, pads reduced to three or four. Tail long ; basal half with short hairs, not clothed sufficiently to hide scales, distal half with gradually lengthening hairs toward the pencilled tip. Gland on throat sharply defined by solid, silvery hair, quite distinct from the normal hair.

Genotype . . . *N. mitchelli* Og.

Notomys gouldi (Gould).

Hapalotis gouldi, Gray, Grey's Journal, II, Append., p. 404, 1841 (nomen nudum) ; List Mamm. Brit. Mus., p. 116, 1843 (nom. nud.).

Hapalotis mitchelli, Gould, Mamm. Aust. III, pl. IX, 1845, W. Aust., nec *Dipus mitchelli*, Ogil.

Hapalotis gouldi, Gould, Pro. Zoo. Soc., 1851, p. 127 (nom. nud.) ; Mamm. Aust., III, Introd., p. XXXV, 1863.

Hapalotis richardsoni, Gray, Voy. "Erebus" and "Terror," Mamm., p. 12d, pl. XXVIII, fig. 2, 1875.

Notomys gouldi, Thomas, Pro. Zoo. Soc., 1906, p. 767 ; Ann. Mag. Nat. Hist. (9), VIII, p. 538, 1921.

Large, comparatively thinly haired. General colour between buffy- and olive-brown. Dorsal fur (11.5 mm.), slate for three-fourths of length, then cinnamon buff with dark tips, slate of base showing through and imparting a cool tone. Sides of body lighter, dark tips being less pronounced. Cheeks lighter, upper lip almost white. Ear long and oval in outline ; outer surface sparsely clothed with short, fine, brown hairs, inner surface with silvery adpressed hairs, most numerous round edges. Chin and throat clothed with silky, silvery hair, white to base in sharp contrast with remainder of ventral fur. Ventral surface of body greyish white, hairs basally grey with white tips, the grey showing through. Tail brown above, white below ; extreme tip uniformly clothed with dark hairs (15 mm.). Manus and pes sparsely covered with silvery hairs, which form fringe round distal pads. Pes slender (4.5 mm. at base of toes 2.3.4.), hallux small. Four pads ; hallucal distinctly raised in 8 specimens, less so in remainder.

Skull.—For size of animal, small and slender in build, with narrow muzzle and small bullae (ant.-post. length two-thirds of diastema).

Teeth.—Index of incisors 50°–58°.

Habitat.—West Australia.

Type.—In British Museum.

Fifteen specimens examined; Champion Bay, King George's Sound, Ongerup, unspecified localities, W.A.; (?) Ooldea, S.A. Nat. Mus. Nos. R1765–6, R1106, C5–9.

Except for a few specimens no precise localities are preserved, the majority being labelled "West Australia." A specimen from the West Australian Museum collection is reputed to be from Ooldea, South Australia, but it is possible that this may be in error.

N. gouldi stands out from among the remainder of the genus by reason of its larger size and cool colour, and by its slender feet, on which the hallux is very much smaller, comparatively, than that of any other species.

Notomys macrotis Thomas.

Hapalotis macrotis, Gerrard, Cat. Bones Mamm. B.M., p. 171, 1872 (nom. nud.); Gould, Mamm. Aust., Introd., p. XXXV, 1863 (nom. nud.).

Notomys macrotis, Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 538, 1921.

Thomas' description is as follows. "Similar to *N. gouldi*, but larger, the hind foot about 40 mm., the skull some 2 or 3 mm. larger than in that animal. Fur rather coarser. Colour apparently similar. Interorbital space comparatively broad. Palatal foramina large, open, about 2.6 mm. in breadth as compared to 1.8 mm. in *gouldi*. Choanae also markedly broader, nearly 3 mm. in breadth. Orthodont; incisive index of type 68°. . . Habitat. Interior of Western Australia, on Moore's River."

No specimen in the series examined can be attributed to *N. macrotis*. Though many approach, and some equal, in size, the type of that species, none is "readily distinguishable by its large and open palatal foramina," nor do any approach in incisor index the 68° of the type's "incisive index."

Moore's River can scarcely be called the "interior of West Australia." It is a small river some 60 miles north of Perth.

Notomys mitchelli (Ogilby).

Dipus mitchelli, Ogilby, Trans. Linn. Soc., XVIII, p. 130, 1841.

Notomys mitchelli, Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 539, 1921; id. Ann. Mag. Nat. Hist. (9), IX, p. 315, 1922; Wood Jones, Rec. Sth. Aust. Mus., III, p. 3, 1925; id. Mamm. Sth. Aust., III, p. 339, 1925.

Medium sized. General colour tawny-olive, darker on mid-dorsal line. Individual hairs (14 mm.) slate for a little more than half length, then tawny with dark tips, the latter becoming more pronounced towards tail. Sides of body lighter, cheeks lighter, upper lip white. Ears long, tips bluntly pointed, outer surface sparsely covered with dark-brown hairs, inner surface with silvery, adpressed hairs. Gular glandular area defined by silky white, solid

hair. Ventral surface and inner side of limbs greyish-white ; basally grey with the distal half white. Tail brown above, white below to tip. Manus and pes silvery white. Pes comparatively stout (4 mm. at base of toes 2.3.4.). Four pads ; hallucal pad much more clearly defined in some specimens than in others, but in all at least an indication is present.

Skull.—Large ; muzzle comparatively heavy, generally with open palatal foramina. Bullae medium (ant.-post. length three-fourths of diastema).

Teeth.—Index of incisors 53°–60°.

Habitat.—Southern portion of the Australian Continent.

Type.—In Australian Museum, Sydney.

Thirty-seven specimens examined ; Murray River, Vict. ; Ooldea, S.A. ; Balladonia, Bencubbin, Gibson, L. King, W.A. Nat. Mus. Nos. R1767, C10–35.

The series examined consists principally of specimens collected by Blandowski on the River Murray in 1857 ; in all of these the occipital region of the skulls, including the bullae, has been cut away. A small series of recent specimens practically identical with the above was loaned for examination, with others, by the Western Australian Museum. Mr. E. Le G. Troughton kindly compared two Blandowski specimens with Mitchell's original material from near the junction of the Murray and Murrumbidgee Rivers described by Ogilby in 1841 and preserved in the Australian Museum, Sydney ; he considers that they are quite typical.

Notomys mitchelli macropus Thomas.

Notomys mitchelli macropus, Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 540, 1921 ; Wood Jones, Mamm. Sth. Aust., III, p. 341, 1925.

A long haired, pale race, with foot slightly longer and stouter than in typical *mitchelli*. General colour between avellaneous and wood-brown, but darkened on mid-dorsal surface by a heavy grizzling of dark tipped hairs. Dorsal fur (18 mm.) slate for two-thirds of length, then pallid with dark tips. Sides of body lighter, upper lip white. Ear long ; more truly oval than in typical *mitchelli ;* hair on outer surface same colour as on body. Gular glandular area as in *mitchelli*. Ventral surface white, hairs basally grey for a little less than half length. Tail greyish-brown above, white below. Manus and pes white. Pes stout (5 mm. at base of toes 2.3.4.). Hallucal pad present.

Habitat.—South-eastern South Australia and Victoria.

Type.—In British Museum.

One specimen only examined, taken in 1914 in the northern Mallee, Victoria. The skull is crushed, and, unfortunately, cannot be removed from the skin. Nat. Mus. No. R5938.

Notomys mitchelli alutacea subsp. nov.

A long-haired, reddish form, in which basal part of dorsal hair (17 mm.) is tinged with a vinaceous hue, being faded brown rather than grey. Subterminal band cinnamon, tipped with Prout's brown. Sides of body, crown, and cheeks

lighter, upper lip white. Ears bluntly pointed at tips; outer surface with numerous fine russet hairs, inner surface with a few silvery hairs at tip. Gular glandular area well defined; clothed with solid, silky hair. Ventral surface yellowish-white, hairs basally a faded brownish-grey. Tail russet-brown above, white below to tip. Manus and pes white. Pes heavy (4.5 mm. at base of toes 2.3.4.). Hallucal pad present.

Skull.—Similar to *mitchelli*; large and heavy.

Teeth.—Index of incisors 50°–56°.

Habitat.—Central South and Southern West Australia.

Type.—In National Museum, Melbourne, ♀, No. C38, from Ooldea, South Australia.

Dimensions of type (measured from spirit).—Head and body 98 mm.; tail 145 mm.; hind foot 37 mm.; ear 23 mm.

Skull.—Greatest length 32 mm.; basal length 25.5 mm.; greatest breadth 16 mm.; nasals 12 x 3 mm.; interorbital breadth 5.3 mm.; palate length 15 mm.; breadth outside $m.^2$ 6.5 mm.; breadth inside $M.^2$ 3.3 mm.; palatal foramina 5.8 x 1.8 mm.; diastema 7.3 mm.; upper molars 5 mm.

Ten specimens examined; Ooldea, S.A.; Central Australia; West Australia. Nat. Mus. Nos. C38-42.

Intensity of reddish colouration varies in the series of skins examined. The most deeply tinted specimen is reputed to be from West Australia, and taken in 1865. In this the basal half of the fur is a strong russet, as, to a lesser extent, is the general colour of the animal. The majority, however, have not this intensity of colour though they are warm in tone and lacking the ochraceous colouration of typical *mitchelli*.

Notomys alexis Thomas.

Notomys mitchelli Thomas (*nec* Ogilby), Proc. Zoo. Soc. Lond., 1906, p. 539; *id.*, Ann. Mag. Nat. Hist. (9), VIII, p. 539, 1921.

Notomys alexis Thomas, Ann. Mag. Nat. Hist. (9), IX, p. 317, 1922.

Ascopharynx fuscus Wood Jones, Rec. Sth. Aust. Mus., III, p. 3, 1925; *id.* Mamm. Sth. Aust., III, p. 344, 1925.

Short-haired. General colour sayal-brown; much more uniform and less grizzled than in any other species examined. Dorsal fur (11 mm.) slate for about basal half, then cinnamon with darker tips. Cheeks and upper lip white. Ears comparatively short; tips bluntly pointed; outer surface with a few brown hairs, inner surface with a few silvery hairs. Gular glandular area very variable, some specimens having a well-formed fold of skin along posterior border forming a pouch, others simply a flat area; between these extremes are intermediate stages. Basal colour of hair on ventral surface white to base on anterior portion of body, grey basally on posterior portion; in some specimens the basal grey is a very light tint and confined to inner side of hind limbs; in others a darker grey extends to lower chest. Tail brown above, white below; tip not as bushy as in other species. Manus and pes white. Pes comparatively stout (4 mm. at base of toes 2.3.4.). Pads either three or four, the hallucal being present in slightly less than half the number examined.

Skull.—Bullae medium. About four-fifths of diastema.

Teeth.—Index of incisors 52°–58°.

Habitat.—Central, Northern and North Western Australia.

Type.—In British Museum.

Fifty-six specimens examined; Alroy, Tennant's Creek, Tanami, Reedy Creek, Alice Springs, Northern Territory; Townsend Range, wells on Canning Stock Route, Western Australia. Nat. Mus. Nos. R12444, C43–80.

Three of the original Stalker series (skins) used by Thomas in erecting the species were loaned by the West Australian Museum.

The type is an "old female" and is large (head and body 106 mm.) in comparison with the great majority of specimens examined including the three Stalker specimens used by Thomas. The others are old alcoholic specimens and have probably shrunk slightly. The average head and body length of the series examined is about 95 mm., though several old females range up to 103 mm. Foot, tail, and ear measurements are reasonably constant throughout.

N. fuscus Wood Jones is placed in synonomy. I have not seen the type specimens of *fuscus*, but have examined the comprehensive series of animals taken during, or just after, the Horne Expedition, which contains a number of the "dark form" mentioned by Waite and by Wood Jones in his extended description of *fuscus*.

Oldfield Thomas entirely disregarded the peculiarities of the gular area when describing *alexis* in 1922, though when dealing with the same specimens in 1906 and 1921 as *mitchelli* (in error) he noted "a glandular organ on the throat."

Formerly *fuscus* (=*alexis*) was considered a dark variant of *cervinus*, but the shorter and less woolly fur, the shorter ears, and the basally grey abdominal fur of the species now under consideration rightly separate it. The colour range of the two species over-laps. A series may be so arranged that the colours grade uninterruptedly from pinkish-cinnamon (*cervinus*) to Saccardo's umber (*alexis*).

Notomys aquilo Thomas.

Notomys aquilo Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 540, 1921.

Thomas' description is as follows: "A small pale species with thin fur. Size slightly less than *mitchelli*.* Fur thin, poor, not woolly. General colour pale sandy brown above, white below, hairs white to their bases. A well-marked neck-gland present in the type. Feet thinly haired, flesh-coloured. Tail sandy brown, not conspicuously bicolour proximally. Skull delicately built. Interorbital region flat, more parallel-sided than usual, less quickly

*Later (1922) referred by Thomas to a new species, *alexis*.

broadening posteriorly. Lacrymal bones unusually large in the type, though this may be mainly due to age. Palatal foramina fairly large, well open. Anterior end of mesopterygoid fossae narrow, parallel sided. Molars small. Incisors more or less orthodont, index of type 70°. Habitat. Cape York, North Queensland."

Type.—In British Museum.

I have not seen the type of this species, but the description applies perfectly to some specimens of *N. alexis* except for two characters : basal colour of ventral fur and higher incisor index. The basal colour of the ventral fur varies in *alexis* as noted above. In some specimens basally grey fur is confined to the inner side of the hind limbs, and the colour is so pale that, in a dry skin, it is difficult to see ; if the skin be damped, however, it at once becomes apparent. The figure given by Thomas for the incisor index of the type *aquilo* is higher than that in any of the present series of *alexis* measured in the manner previously described in this paper ; for this reason alone, I have included his description. I have no doubt, however, that it will prove to be identical with *alexis*, whose distribution might reasonably be expected to extend to the dry areas south of Cape York. In this case *alexis*, which is the later species, would be consigned to the synonomy of *aquilo*.

Notomys cervinus (Gould).

Hapalotis cervinus Gould, Pro. Zoo. Soc., 1851, p. 127.

Thylacomys cervinus Waite, Pro. Roy. Soc. Vict., X, p. 117, 1898, Pl. VI.

Notomys cervinus Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 541, 1921.

Ascopharynx cervinus Wood Jones, Rec. Sth. Aust. Mus., III, p. 3, 1925 ; *id.* Mamm. Sth. Aust., III, p. 343, 1925.

Medium size, long-haired. General colour between cinnamon-buff and clay-colour, grizzled with dark-brown hairs more or less uniformly over dorsal surface. Individual hairs (14 mm.) slate for about half length, then buffy with darker tips. Sides of body lighter, forearms white. Cheeks and upper lip white. Ears long ; tips bluntly pointed ; outer surface lightly clothed with light-brown hair, inner surface with silvery hair. Gular glandular area well marked in all specimens, a fold of skin along posterior border forming a shallow pouch. Ventral surface and inner sides of limbs white, hairs white to base. Tail brown above, white below. Manus and pes silvery white. Pes medium (4 mm. at base of toes 2.3.4.). Pads three or four, the hallucal being present in 12, absent in 5 specimens examined.

Skull.—Bullae medium. More than three-fourths of diastema.

Teeth.—Index of incisors, 52°–58°.

Habitat.—Central and South Australia.

Type (lectotype).—In British Museum.

Seventeen specimens examined ; Charlotte Waters, Mulka, S.A. Nat. Mus. Nos. R12416–7, R12629, R13719–24, R13734–9, R13742–3.

Readily distinguishable from all other species I have seen by the wholly white ventral fur.

Notomys sturti Thos.

Notomys sturti Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 537, 1921.

Thomas' description is as follows: "A long-tailed species, rather smaller than *longicaudatus*. Proportions about as in *longicaudatus*, though the feet are relatively larger. Colour apparently about as in that species, but the only specimen has had the distal part of the fur singed off, so that the exact shade cannot be described. Feet very slender.

"*Skull* apparently similar to that of *longicaudatus*, but smaller in all dimensions. There is, however, no evidence as to the size of the bullae.

"*Habitat.*—Interior of New South Wales in the Lower Darling region. Type 'captured in the Coonbaralba Range about 85 miles from Laidley's Ponds'."

Type.—In British Museum.

I have not seen this specimen. It appears to be closely allied to *longicaudatus*, differing only by its slender feet, and therefore possibly should be placed in the genus *Podanomalus*.

Notomys mordax Thomas.

Notomys mordax Thomas, Ann. Mag. Nat. Hist. (9), IX, p. 317, 1922.

Thomas based this species on a skull as follows: "Size about as in *N. gouldi*, but the general build stouter throughout. External characters unknown. Skull broad, strongly built, with widely open anteorbital foramina and broad frontal region. Interorbital space comparatively broad. Palatal foramina long, well open, extending back past the anterior root of M.[1] Mesopterygoid fossa fairly broad, but not specially broadened anteriorly, its sides practically parallel. Bullae rather small for the bulk of the animal, though slightly larger than in *gouldi*; conspicuously smaller than in the large *longicaudatus*.

"Teeth large and heavy. Incisors orthodont, unusually broad and strong, as broad but not as deep as in *longicaudatus*, flatter and less bevelled in front.

"Habitat. Darling Downs, S. Queensland."

Type (Skull).—In British Museum.

I have not seen this skull.

Genus PODANOMALUS Waite.

Podanomalus Waite, Proc. Roy. Soc. Vict., X, p. 117, 1898.

General characters murine. Differs from *Notomys* mainly by the absence of a gular glandular area, and by the presence, in the male animal only, of an oval, slightly swollen pre-sternal gland directly between the forelegs.

Genotype . . . *P. longicaudatus* Gould.

Podanomalus longicaudatus (Gould).

Hapalotis longicaudatus Gould, Pro. Zoo. Soc., 1844, p. 104.

Hapalotis mitchelli Spencer (as of Ogilby), Report Horne Expdn., II, p. 10.

Podanomalus longicaudatus Waite, Pro. Roy. Soc. Vict., X, p. 117, 1897, Pl. V.

Notomys longicaudatus Thomas, Ann. Mag. Nat. Hist. (9), VIII, p. 537, 1921; Wood Jones, Rec. Sth. Aust. Mus., III, p. 2, 1925; *id.* Mamm. Sth. Aust., III, p. 338, 1925.

Large, heavily-built. General colour tawny-olive, a little darker on mid-dorsal line. Individual hairs (14 mm.) slate for more than half length, then cinnamon with dark brown tips. Cheeks lighter, upper lip white. Ears long; tips bluntly pointed; almost naked. Ventral surface greyish-white, hairs basally slate with greyish-white tips. On male only, an oval gland with raised margin between forelegs. Tail brown above, white below for basal half; then with gradually lengthening black hairs to tip; several specimens have a few white hairs at extreme tip. Manus brown, a little lighter than body. Pes white, heavy (6 mm. at base of toes 2.3.4.). Hallucal pad present in all specimens.

Skull.—Stout. Bullae large, almost or quite equal to diastema.

Teeth.—Index of incisors 60°–65°.

Habitat.—Central Australia.

Type (lectotype).—In British Museum.

Twenty-eight specimens examined; North of Alice Springs, Barrow Creek, Central Australia. Nat. Mus. Nos. R13817–21, R13216–24, C201, C266–268.

The largest of the Jerboa Mice; easily recognised by its size, or in young animals, by the length and heaviness of the pes. Specimens examined comprise seven taken on, or just after the Horne Expedition, and twenty-two taken at Barrow Creek on the Spencer–Gillen Expedition in 1901.

Podanomalus aistoni, sp. nov.

Pale, short-haired. General colour avellaneus, heavily grizzled with dark tipped hairs. Dorsal fur (11 mm.) slate for half its length, then pallid with dark tips. Sides of body lighter. Upper lip white. Ears long; tips bluntly pointed; very sparsely clothed with fine hairs, light brown on outer surface, silvery white on inner surface. Ventral surface and inner side of limbs white. Fur on chest and inner side of fore limbs white to base in some specimens; in others grey for basal half; abdominal region in all specimens basally grey. Oval gland on chest, between the forelegs, of male only. Tail brown above, white below. Manus and pes white. Pes with well-formed hallucal pad on all specimens.

Skull.—Comparatively shorter, and noticeably wider in the interorbital region, than the skull of any other of the Jerboa Mice. Bullae small (two-thirds of diastema).

Teeth.—Index of incisors 65°–67°.

Habitat.—Lake Eyre District, South Australia.

Type.—In the National Museum of Victoria, ♂, R13740, from Mulka, E. of Lake Eyre, S.A.

Dimensions of Type.—Head and body 104 mm.; tail 149 mm.; hind foot 35 mm.; ear 23 mm. (dry).

Skull.—Greatest length 29 mm.; greatest breadth 16 mm.; nasals 10.5 x 3 mm.; interorbital breadth 6.3 mm.; palate length 14.5 mm.; breadth outside $M.^2$ 7 mm.; breadth inside $M.^2$ 3.8 mm.; palatal foramina 5.3 x 2 mm.; diastema 7.8 mm.; upper molars 5 mm.

Fifteen specimens examined from the type locality, Mulka. Nat. Mus. Nos. R13709, R13712, R13726–7, R13729–35, R13740–1.

The series of this species was sent, amongst other animals, to the National Museum by Mr. George Aiston, of Mulka. In recognition of his interest and work, it has been named after him.

Distribution.

The map (Plate VI) showing distribution is self-explanatory and needs little comment. Only specimens at present being dealt with have been recorded on the map, and only such of those with which a specified habitat has been preserved. Generalized localities such as West Australia, Central Australia, etc., have been ignored.

Notomys gouldi appears to be confined to the south-west corner of West Australia, in country having a rainfall of from 20 to 40 inches annually. A number of specimens labelled "West Australia" were collected by Maxwell (1871), who is reputed to have lived near Perth within that area. This needs verification.

N. mitchelli and its subspecies are on the fringe of the desert country with an average rainfall of 10 inches or less. It is probable that *N. m. alutacea* extends for some distance inland from its only specified locality, Ooldea, a number of specimens being labelled "Central Australia."

N. alexis, N. cervinus, Podanomalus longicaudatus, and *P. aistoni* are in true Central Australian desert conditions, the animals being taken almost exclusively in sandy localities.

Key to the species of Jerboa Mice.

The classification of certain species is in doubt, and the key has therefore been divided into two parts, the first dealing with species examined by me, the second with those I have not seen.

A. Gular glandular area clothed with solid hair.
Incisor index less than 60° .. .. NOTOMYS

B. No gular glandular area ; throat hair normal.
Raised gland between forelegs in male only.
Incisor index more than 60° .. .. PODANOMALUS

A.1. Size large. Fur short. Pes to 40 mm.
a.1. Colour greyish brown. Pes slender .. .. .. *N. gouldi*

A.2. Size medium. Fur long. Pes to 38 mm.
a.2. Sides of body strongly ochraceous.
Pes stout .. .. *N. mitchelli*

aa.2. Fur very long and thick. Colour greyish, not ochraceous on sides of body .. .. *N. mitchelli macropus*

aaa.2. Colour reddish (leather colour).
Tail and ears russet, not brown .. .. *N. mitchelli alutacea*

A.3. Size medium. Fur long. Pes to 36 mm.
a.3. Colour pale. Ventral fur pure white to base .. *N. cervinus*

A.4. Size small. Pes to 35 mm. Fur short.
a.4. Colour almost uniform warm brown.
Ventral fur basally grey on abdominal region only .. *N. alexis*

B.1. Size large. Pes to 44 mm.
b.1. Colour brown .. .. *P. longicaudatus*

B.2. Size medium. Pes to 35 mm.
b.2. Colour greyish. Fur short .. .. *P. aistoni*

I have not seen the following species. The remarks are quoted from the author's descriptions.

1. Similar to *gouldi*, but "readily distinguishable by its large and open palatal foramina" .. .. *N. macrotis*
2. Ventral fur white to base. Incisive index 70° .. .. *N. aquilo*
3. "Readily recognised by its long tail and other resemblances to *longicaudatus* combined with its markedly smaller size." .. *N. sturti*
4. "Readily distinguishable from all species of which the skull is known by its robust build and heavy incisors" .. .. *N. mordax*

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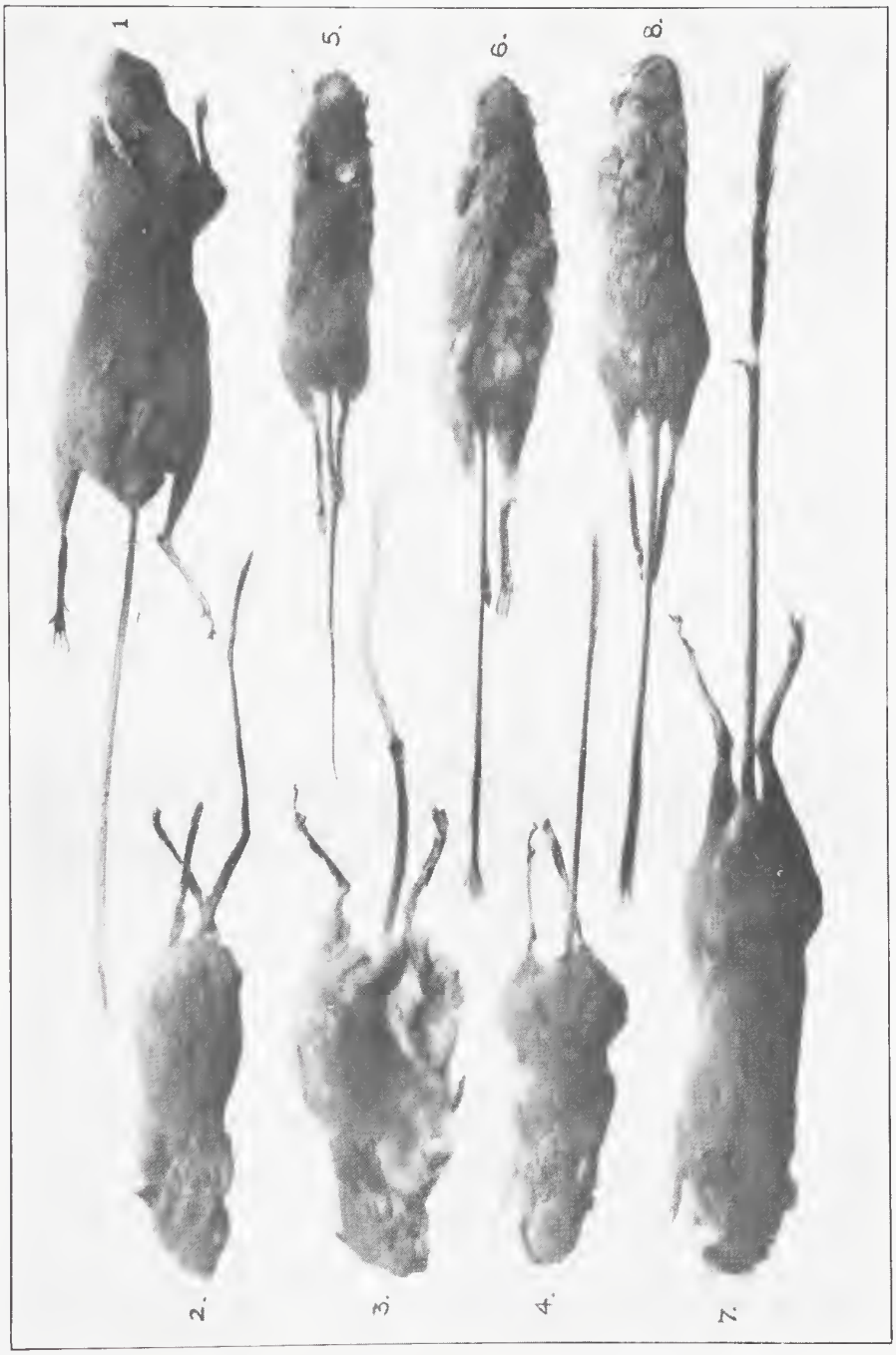
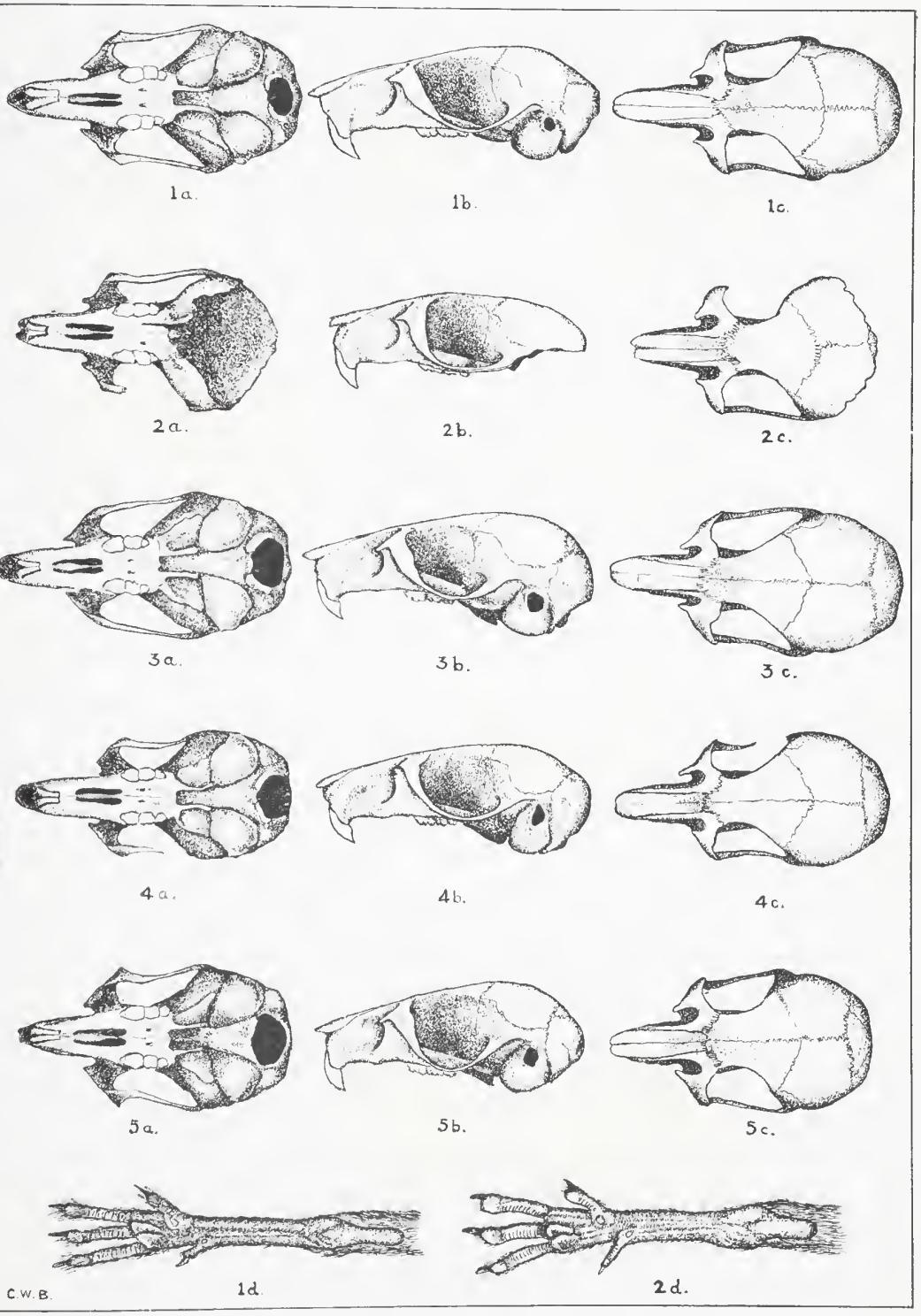


Notomys and Podanomalus



Notomys and Podanomalus


DARWIN
WYNDHAM
NORTHERN AUSTRALIA
BORROLOOLA
COOKTOWN
CAIRNS
NORMANTON
BROOME
DERBY
TANAMI
CENTRAL AUSTRALIA
L. McDonald
L. Disappointment
L. Amadeus
ALICE SPRINGS
QUEENSLAND
ROCKHAMPTON
WESTERN AUSTRALIA
SOUTH AUSTRALIA
BRISBANE
GERALDTON
KALGOORLIE
L. Torrens
L. Frome
L. Cairdner
PERTH
NEW SOUTH WALES
C. Naturaliste
C. Leeuwin
ALBANY
ADELAIDE
SYDNEY
CANBERRA
Kangaroo I.
VICTORIA
MELBOURNE
LAUNCESTON
TASMANIA
C. Otway
Wilsons Promtry
King I.
Flinders I.
HOBART
Thursday I.

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Plate V

Fig. 1. *Notomys gouldi* (Gould).

Fig. 2. *N. mitchelli* (Ogilby).

Fig. 3. *N. mitchelli macropus* Thomas.

Fig. 4. *N. mitchelli alutacea*, sub sp. nov.

Fig. 5. *N. alexis* Thomas.

Fig. 6. *N. cervinus* (Gould).

Fig. 7. *Podanomalus longicaudatus* (Gould).

Fig. 8. *P. aistoni*, sp. nov.

Plate VI

Skulls. *a*, ventral view. *b*, lateral view. *c*, dorsal view. *d*, left pes.

Fig. 1. *Notomys gouldi* (Gould).

Fig. 2. *N. mitchelli* (Ogilby).

Fig. 3. *N. mitchelli alutacea*, sub sp. nov.

Fig. 4. *N. alexis* Thomas.

Fig. 5. *Podanomalus aistoni* sp. nov.

Plate VII

Map showing distribution.

1. *Notomys gouldi*. 2. *N. mitchelli*. 3. *N. mitchelli macropus*. 4. *N. mitchelli alutacea*. 5. *N. alexis*. 6. *N. cervinus*. 7. *Podanomalus longicaudatus*. 8. *P. aistoni*.

Body Measurements.

GENUS. SPECIES.	Sex.	Reg. No.	Head & Body.	Tail.	Hind Foot.	Ear.
			mm.	mm.	mm.	mm.
NOTOMYS.						
gouldi	♀	R1105	118	147	37·5	22·5
,,	♂	R1106	124	158	38	22·5
,,	♀	R1766	136	150	37·5	23·5
macrotis		—	118	—	40·5	26
mitchelli	♀	R2186	112	148	36	23·5†
,,		R1768	107	133	34·5	23·5†
* ,,	♀	M1660	107	151	36·5	25§
* ,,	♂	M1659	108	151	37	24§
,, *macropus*	♀	R5938	112	145	37	24
,, *alutacea*	♀	R13832	98	145	37	23
,, ,,	♀	R13834	102	144	37	23
,, ,,	♂	R13833	96	142	38	24·5
alexis	♀	R13836	97	139	32·5	18·5
,,	♀	R13837	92	123	31	19·5
,,	♂	R13838	94	105	32	20·5
aquilo		—	108	—	35	16
cervinus	♀	R13739	103	147	35·5	23
,,	♀	R12416	98	130	33	23
,,	♂	R13742	90	144	35	24
sturti		—	132	200	45	
mordax		—	—	—	—	—
PODANOMALUS.						
longicaudatus	♀	R13917	144	199	42	26
,,	♀	R13216	134		42	28
,,	♂	R13211	123	169	43	24
aistoni	♀	R13727	103	158	34	23
,,	♀	R13741	105	138	34·5	24
,,	♂	R13711	96	144	35	25

*Specimens from Ooldea ; loaned by West Aust. Museum, Perth.
†Cabinet skin.
§Spirit specimen.

Skull Measurements.

GENUS	SPECIES	Reg. No.	Greatest length	Basal length	Greatest breadth	Nasals length	Nasals breadth	Interorb. breadth	Palate length	Breadth outside M2	Breadth inside M2	Palatal foramina	Dia-stema	Length upper M series	Incisor index
			mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	
NOTOMYS															
	gouldi	R13831	?33	?28	16	12·5	3	5	17	7	4	7 x 2	8	5·3	58°
	,,	R1766	?30	?25	15·5	11·5	3	5	16·5	7	3·8	6·3 x 2	7·5	5·3	—
	macrotis	—	—	—	—	12·5	—	6·1	14	—	—	6·5 x 2·6	—	5·5	—
	mitchelli	R1767	—	—	—	10·5	3	5	?14	6·3	3·3	5 x 1·8	7·5	5·2	56°
	,,	R13835	—	—	—	11·5	3·5	5	14	6·3	3·3	5·5 x 2	7·5	5	58°
	* ,,	M1555	31	26	16	11	3	5	14	6·3	3·5	5·5 x 1·8	7	5	56°
	,, *macropus*	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	,, *alutacea*	R13832	32·5	25·5	16	12	3	5·3	14	6·5	3·5	5·3 x 1·8	7	5	54°
	,, ,,	R13834	32·5	26·5	16	12·3	3	5	14·5	6·3	4	6 x 2	8	5	58°
	alexis	R13836	30	25·5	15	10	3·3	5·3	15	6·3	3	4·5 x 1·5	6·5	5	55°
	,,	R13837	28·5	25	15	11	3	5	14	6·3	3	4·8 x 1·8	6·8	5	—
	aquilo	—	—	—	—	11·2	—	5·2	13·2	—	—	5·8	—	5	—
	cervinus	R13839	31·5	27	15·5	11·5	3	5	16	6·8	3·5	5 x 1·8	8	5	58°
	,,	R13742	31	26	15·5	10	3	5	15·8	6·5	3·3	5 x 1·8	7·8	5	57°
	,,	R12416	29	24	15·3	10	3	5	14·3	6	3·2	4·5 x 2	7	5	53°
	sturti	—	—	—	—	13·8	—	6·5	16·3	—	—	8 x 2·3	—	5·8	—
	mordax	—	33·5	30	—	12·6	—	5·9	15	—	—	6·8 x 2·1	—	6·3	—
PODANOMALUS															
	longicaudatus	R13197	39	33	21	15	4·5	6·3	20·5	8·8	4·2	7·5 x 2·5	9·5	7·3	65°
	,, (*young*)	R13187	32	—	18	11	3·8	6	15·5	7·8	3·2	6·2 x 2·3	9	6·5	61°
	aistoni	R13727	28·5	24·8	15·8	10·3	3	6	14·3	6·8	3·8	5·5 x 2	7·5	5	65°
	,,	R13741	28·5	24·5	16	10	3	7	14·5	7	4	5·5 x 2	7·5	5	67°

*Ooldea specimen ; lent by West. Aust. Museum.

Notes.—*N. macrotis* :—"Upper length from back of parietals 30 mm." (Thomas).
N. aquilo :—"Back of parietals to front of nasals 26.3 mm." (Thomas).
N. sturti :—"Back of frontals to tip of nasals 25.6 mm." (Thomas).