

## NEW AND OTHER WHITE-TOOTHED RATS FROM SIAM.

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Mr. K. G. Gairdner, C.M.Z.S., has sent me three examples of this interesting Indo-Chinese group of rats, some of which are very little known and are difficult to determine in the absence of direct comparison with topotypes.

The first of the specimens is a member of the species *Rattus berdmorei* (Blyth) and is easily separated from the other two on account of its darker, greyer upper-parts, more projecting upper incisors, which are practically without any backward curve, and very large bullae. It is apparently only the third known specimen of

1. *Rattus berdmorei mullulus* (Thomas).

*Mus berdmorei*, Thomas (partim) Ann. Mus. Civ. Genova (2a) x (xxx), p. 938 (1892). [Thagata, Muleyit Range, Tenasserim].

*Epimys berdmorei*, Kloss P. Z. S. 1916, p. 59 [Measurements of the above: type of *R. b. mullulus*].

*Epimys berdmorei mullulus*, Thomas, Journ. Bombay N.H.S., xxiv, p. 413, 14 (1916).

1 ♀ vix ad. from Me Maw near Lakon, North Siam [No. 2507/CBK]. Collected by Mr. K. G. Gairdner on 3 Oct. 1915. Orig. No. 224.

Fur consisting of shorter soft hair and longer slender, pliable, flattened spines.

Colour above clove brown with a frosted appearance caused by the pale buffy tips of the under fur and by the exposure of the pale basal portion of the spines; a distinct sheen on the back: sides of head, neck and body and the limbs, grizzled brownish grey. Fore digits practically naked, metapodials brownish white: hind feet white from the claws nearly to the ankles. Under-parts entirely white, this colour separated from the hind-feet by an indefinite narrow band of brownish grey. Tail apparently black throughout and clad with dark hairs.\*

Mr. Gairdner notes, "Grey rat, tail shorter than body, tubercles on feet very pronounced: five prominent plantar pads and one small; on the fore-feet the lower plantar pads are larger than the thumbs. Ear rounded and large. Lower incisors long, slender and white."

\* See also description of *Rattus berdmorei magnus* (Kloss, P.Z.S. 1916 pp. 57-9, fig. 1) from S. E. Siam, which is very similar in colour and type of skull.

Apart from smaller size the skull appears to differ from that of *R. b. magnus* in having the palatal foramina protracted backwards to a line joining the roots of the first molars, broader teeth and nasals truncated posteriorly.

(For measurements see table *postea*).

The other specimens differ from *R. b. mullulus* in larger size; browner, more warmly coloured upper parts; smaller bullae and upper incisors a little more curved toward the throat, but markedly less so than in orange-toothed rats. The larger of the two is related to *R. bowersi* (Anderson) from near Bhamo, Upper Burma, and *R. ferreocanus* (Miller) from Trang, Peninsular Siam. I have only been able to compare it with specimens of the latter, but Mr. Thomas and I have noted some differences between the two which, taken together, seem to indicate that *bowersi* is browner, less grey in colour, has the dark areas of the feet less extensive, larger bullae but smaller teeth.\* In all these features Mr. Gairdner's specimen differs from *ferreocanus* in the same way, and I should call it *R. b. bowersi*, were it not that the latter is described as being "pale yellow below and on the feet and on the tip of the tail, distinctly defined from the darker colour..... This species is closely allied to those rats which are distinguished by yellow bellies." It is also figured as yellow below with no distinct line between the lower parts and sides, etc.† The present example is beneath white, clearly margined from the brown of the sides, as in *ferreocanus*, and I look upon it as a link connecting the two as races of one species and name it

## 2. *Rattus bowersi lactiventer*, subsp. nov.

*Type.* Adult male from Sikawtur, 40 miles N. W. of Raheng, W. Siam, 1500 ft. [No. 2635/CBK.] Collected by Mr. K. G. Gairdner, on 21 May, 1917. Orig. No. 433.

Differs from *R. b. bowersi* in being white, not yellow beneath, and from *R. b. ferreocanus* in being browner and warmer above and with a good deal of white on the feet; from both in having no pale tip to the tail.

\* Thomas, Journ. Bombay Nat. Hist. Soc., XXIV, p. 410 (1916); Kloss, Records Indian Museum, XIII, p. 5 (1917).

† Anderson, Anat. & Zool. Researches, p. 304, pl. XVII (1878).

Pelage composed of soft woolly under fur and longer stiffer hairs, or spines not visibly flattened.

Colour above, glossy Natal brown grizzled by the pale buffy tips of the under fur, paler on the sides, fore-limbs and thighs; muzzle, cheeks, crown, sides of neck and the lower leg brighter, near Verona brown in colour; base of hairs neutral grey, of spines whitish. Below white throughout except the ankle, the white clearly margined from the brown of the sides, etc. Fore-digits whitish, metapodials grizzled brown; hind feet white, slightly darkened down the middle, ankles brown. Tail apparently dark throughout except at the base beneath. Ears large, 23 mm. broad.

Skull like that of *ferreocanus*, the ante-orbital plate with the lower edge vertical; but the nasals not extending so far behind the premaxillaries, posterior edge of frontals more curved, bullae larger, palatal foramina slightly smaller, falling short of the molars by nearly 2 mm., and the tooth-rows markedly diverging posteriorly.

*Rattus mackenziae feae* (Thomas),\* though from an adjacent locality (Thagata, Muleyit Range, Tenasserim) and of nearly the same size, cannot be the same as this animal, for its colour is indicated as being "nearly deep purplish grey but browner," while this shows no tone of grey at all but is of a warm brown colour. Mr. Gairdner refers to it in his notes as the "chestnut-cheeked rat."

(For measurements see table *postea*).

The third specimen, though from the same place and of the general colour as the last, is smaller, yet the teeth indicate that it is of about the same age. I know of no form to which it seems allied and therefore describe it as

### 3. *Rattus kennethi*, sp. nov.

*Type.* Adult female from Sikawtur, 40 miles N. W. of Raheng, W. Siam, 1500 ft. [No. 2636/CBK.]. Collected by Mr. Kenneth G. Gairdner on 14 March 1917. Orig. No. 403.

Like *R. b. lactiventer* but smaller and without the warmer colouring on the sides, etc.; feet of more clearly defined dark and white pattern, tail pale below with a distinct pale tip. Skull more rounded and relatively broader, palatal foramina reaching the line of the molars, toothrows diverging rather less posteriorly.

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\* Journ. Bombay Nat. Hist. Soc. XXIV, p. 412 (1916).

Pelage composed of soft under fur and longer stiffer hairs, or spines not visibly flattened.

Colour above glossy Natal brown slightly grizzled by the buffy tips of the under-fur; sides of head, neck, body and the limbs paler, duller and rather more grizzled: base of under fur neutral grey, of the longer stiffer hairs whitish. Below white throughout. Fore-digits whitish, metapodials brown. Feet white, the median line of the metapodials clearly defined brown; ankles brown. Tail dark above, pale beneath where the hair clothing it is pale: the terminal 15 mm. pale all round.

Skull with broader ante-orbital foramina than in *R. b. lactiventer*, the front edge of the plate slightly convex and overhanging the base; palatal foramina longer and pointed posteriorly, bullae relatively rather smaller.

Measurements of Siamese White-toothed Rats in millimetres.

	<i>R. bermorei multulus</i> ♀	<i>R. bowersi lactiventer</i> ♂	<i>R. kennethi</i> ♀
Head and body ... ..	180	235	215
Tail ... ..	152	255	242
Hindfoot s. u. ... ..	37.5	50.5	46
Ear ... ..	24	28.5	26
Skull:—			
greatest length ... ..	40.3	53	45.5
condylo-basilar length ... ..	38 *	47.4	42
palatilar length ... ..	20	25.2	22.2
diastema ... ..	13	16.5	14
upper molar row (alveoli) ... ..	7.2	9.1	8.8
combined palatal foramina ... ..	7 × 2.4	8.3 × 3.2	8.9 × 3
m <sup>3</sup> -m <sup>3</sup> (alveoli) ... ..	3.4	5	4.2
nasals ... ..	14.7* × 4.6	22 × 6.8	18.3 × 5.1
interorbital breadth ... ..	6.3	7.7	6.9
brain case breadth ... ..	17	19.7	18.2
zygomatic breadth ... ..	21.6	26.1	23.4

\* Approximate