

On *Rattus blythi* Kloss (*Mus cinnamomeus* Blyth).

With remarks on allied forms.

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In a collection of mammals made by Mr. K. G. Gairdner near Raheng, Western Siam, are several examples of a rat which I identify, after comparison with the type, as *Rattus blythi* mihi (*Mus cinnamomeus* Blyth) — a form that does not seem to have been met with since it was first described by Blyth in 1859 and given a name unfortunately preoccupied and therefore untenable.

Mr. Gairdner's series consists of seven skins and six skulls taken during February and March, 1917, at Me Taw and Sikawtur, 1500 ft., about 40 miles N. W. of Raheng — a locality a hundred miles distant from Shwegyin in North Tenasserim where the type specimens were obtained by Major Berdmore.

In 1917 I contributed some notes to the "Records of the Indian Museum" (vol. xiii, p. 7) on the tailless type of "*Mus cinnamomeus*" and compared it with *Rattus cremoriventer cremoriventer*,¹ which it closely resembled in colour.

Mr. Gairdner's specimens show, however, that *R. blythi* has a bicoloured tail — a character that at once proves it to belong to a different species; for *cremoriventer* has a tail dark throughout and also almost pencillate, while that of *blythi*, though well clad in a normal way, has no elongate hairs at the tip.

Further, while the upper pelage is of the same composition and of practically similar colour, the fresh specimens show that *blythi* is beneath of a whiter, less creamy tone than *cremoriventer*.

As regards the skulls, those of *blythi* have less spatulate nasals but broader anteorbital plates, while the palatal foramina extend back to a line joining the front molars: in *cremoriventer* they fall short of this.

The upper incisors of *blythi* curve backwards noticeably more than do those of *cremoriventer*, which in this respect is resembled, among rats of this group directly known to me, only by *Rattus*

1. *Vide* Notes on page 68 postea.

orbis,² a member of the bicoloured-tailed section (The curve of the incisors is not a very satisfactory character in this connection, as the differences are not great, but the skulls of some of the rats of the group are so alike that it is of some use). *R. blythi* is also a larger animal and in size comes near *R. c. tenaster*.³

R. blythi differs from *orbis* in having much less intensely coloured upper parts and whiter undersurface: has a shorter tail with a larger white area, narrower interpterygoid space, narrower, more parallel-sided, palatal foramina.

The skull and teeth of *blythi* do not appear to differ materially from those of *Rattus bukit*,⁴ but the fur is brighter coloured above and whiter below; the white of the hind leg is more frequently cut off from that of the foot; the hair of the tail distally is often white above, while that of *bukit* is dark; and the pelage is looser, less compact of spines and not so stiff (thus like *cremoriventer*).

In the same way that the upper incisors of *blythi* and *bukit* differ from *cremoriventer*, so do those of *marinus*.⁵ However, *blythi* may be distinguished from this last by its smaller palatal foramina and narrower interpterygoid space, while its colour is a little brighter above and less creamy below.

The differences between the above forms may be set out as follows:—

- | | | | |
|---|---|--------|----------------------------------|
| A. Tail unicoloured, somewhat pencillate, incisors less curved backwards. | | | |
| a. | Smaller. | | ... <i>R. c. cremoriventer</i> . |
| b. | Larger. | | ... <i>R. c. tenaster</i> . |
| B. Tail bicoloured, no longish hairs at tip. | | | |
| a. | Incisors less curved backwards, tail with less white below and generally over 200 mm. long, bullae larger. | | ... <i>R. orbis</i> . |
| b. | Incisors more curved backwards, tail with more white below and generally less than 200 mm. long, bullae smaller | | |
| a1 | Palatal foramina larger. | | ... <i>R. marinus</i> . |
| b1 | Palatal foramina smaller. | | |
| | a2 Colour duller, pelage stiffer. | | ... <i>R. bukit</i> . |
| | b2 Colour brighter, pelage less stiff | | ... <i>R. blythi</i> . |

2, 3, 4, 5. *Vide* Notes on page 68 postea.

All these rats are medium-sized animals with tawny to clay-coloured upperparts thickly sown with flattened spines having pale horny green bases, strongly margined whitish or creamy underparts and bicoloured tails (except *cremoriventer*), while the bullae are small and flattened.

Others of the same group, not referred to above, are:—*R. pan*,⁶ like *bukit*; but the white of the underparts not extending to the hind feet, interpterygoid space more abruptly truncate anteriorly, rostrum rather heavier and nasals longer. *Rattus pan* and *marinus* are undoubtedly local forms of *R. bukit*, whereas *gracilis* and *orbis* probably represent *R. rapit* Bonhote (t. c., p. 123) from Kina Balu, North Borneo.

A rat not known to me by topotypical examples is *R. lepidus*.⁷ A single specimen from North Siam referred to it⁸—except for decrease in the number and size of spines—seems not to differ materially from *R. bukit*.

I have seen no specimens of *R. gracilis*⁹ which Mr. Thomas stated (l. c.) to be closely allied to *R. bukit*, but later (*in litt.*) concludes is the same as *R. orbis*: if so it is quite different from *blythi* and from *bukit*; and it must be admitted that while *orbis* was being described *gracilis* was entirely over-looked.

*Rattus sakeratensis*¹⁰ I am quite unable to place for the present; it was founded on a single specimen which I have not seen.¹¹

The following are the description and measurements of Mr. Gairdner's series of *Rattus blythi*:—

Upper pelage thickly set with broad spines with greenish bases and grey tips: rump sown with long black-tipped piles. Tail dark above and whitish below. Colour above cinnamomeus, intermediate between ochraceous-tawny and the same tinged with amber-brown; the back streaked by the blackish tips of the spines: base of fur grey. Head, sides and limbs more ochraceous-buffy.

6, 7, 8, 9, 10, 11. Vide Notes on page 68 postea.

Underparts, hands and feet creamy white (ivory yellow); white of hind feet sometimes continuous with that of the leg and sometimes striped mesially with brown. Hair of the upper surface of the tail sometimes whitish distally. (In No. 2627 the whole tail is white for more than half its length, both skin and hair; in No. 2622 for less than a quarter.)

NOTES.

1. *Mus cremoriventer* Miller, Proc. Biol. Soc. Washington, xiii, 1900, p. 144, pl. v. figs. 2, 2a, 2b (Trang, 3000 ft., Peninsular Siam).
2. *Epimys orbus* Robinson & Kloss, Ann. & Mag., xiii, 1914, p. 228 (Kao Nong, Bandon, 3500 ft., Peninsular Siam).
3. *Epimys tenaster* Thomas, Ann. & Mag., xvii, 1916, p. 425 (Mt. Muleyit, 5-6000 ft., Tenasserim).
4. *Mus bukit* Bonhote, Ann. & Mag., xi, 1903, p. 125 (Bukit Besar, Patani, Peninsular Siam).
5. *Epimys marinus* Kloss, P. Z. S., 1916, p. 50 (Koh Chang Id., S. E. Siam).
6. *Epimys jerdoni pan* Robinson & Kloss, t. c. s., p. 229 (Koh Samui Id., West coast of Peninsular Siam).
7. *Epimys lepidus* Miller, Smithsonian Miscellaneous Quarterly, 61, 1913, p. 20 (Bok Pyin, South Tenasserim).
8. *Vide* Journ. Nat. Hist. Soc. Siam, iii, 1918, p. 60 (Muang Prae).
9. *Epimys gracilis* Miller, Sm. Misc. Quart., 61, 1913, p. 21 (Mt. Muleyit, 5-6000 ft., Tenasserim).
10. *Rattus sakeratensis* Gyldenstolpe, Kungl. Sv. Vet. Akad. Handl., 57, 1917, p. 46, pl. vi, figs. 6 & 9 (Sakerat, south of Korat Town, Eastern Siam).
11. *Vide* Journ. Nat. Hist. Soc. Siam, iii, 1919, p. 381.

Measurement of *Rattus blythi* in millimetres.

Locality	Sex	Head and body	Tail	Hind foot	Ear	SKULL.								No.	Remarks.
						Greatest length	Condylor-basilar length	Palatilar length	Diastema	Upper molar row (alveoli)	Combined palatal foramina	Nasals	Zygomatic breadth		
Sikawtur and Me Taw															
Near Raheng, W. Siam	♂	153	195	28.5	20.5	—	—	—	—	—	—	—	—	2622	
" "	♀	125	169	28	19.5	—	—	15	8.7	6.1	6.1 x 2.4	13.0 x 4.0	17.2	2623	
" "	♀	123	160	26	19.5	35.3	29*	14.8	8.4	6	5.5 x 2.1	13.0 x 3.9	17.8	2624	
" "	♂	138	183	27	20	36.9	30.5*	15.6	9.3	6	6.0 x 2.6	13.8 x 4.1	17.5	2625	
" "	♀	134	177	27	20	36.5	29.1	15	8.9	6.1	6.0 x 2.1	14.3 x 3.8	17	2626	
" "	♂	135	175	28.5	21	37.3	30.6	15.3	9	6.3	5.9 x 2.5	13.8 x 3.9	17.1	2627	
" "	♂	152	161	34	22.5	41.2	33.9	16.5	10.3	6.1	6.3 x 3.0	16.4 x 4.7	19.4	2628	Teeth much worn.
Shwegyin, N. Tenasserim	—	152	197	32	—	38*	—	15.4	9.4	6	6.4 x —	13.9 x 3.9	—	336A	{ Type of <i>R. blythi</i> , † co-type of <i>M. cinnamomeus</i> ‡
" "	♂	125*	198	31	—	35	—	14.8	8.1	6.3	5.6 x —	11.8 x 3.7	—	336B	{ Co-type of <i>M. cinnamomeus</i> . Teeth worn.**
Pa Wa Gorge, N. Siam	♀	148	160	26	—	—	—	15.9	9.5	6.1	7.0 x 2.4	14.0 x 4.2	17.8	2508	

* Approximate. † Teeth only slightly worn. ‡ Rather younger than the type. ** The Pa Wa specimen has the fur exceedingly worn and the skull damaged: it seems, however, only to differ from the rest in having longer palatal foramina and more creamy underparts and may be placed with them for the present. Mammae 2-2=8.

