
A most interesting feature in the history of *longicaudata* taxonomy is the absence of comment regarding the gross malformation in the holotype skull. The specimen was originally displayed as a mount (¿ hence the missing basicranium and lack of cranial and dental measurements accompanying the type description). But it must have been extracted prior to 1880 for Thomas lists its critical measurements in his Catalogue (1888: 299). Tate (1947) referred to the additional lower incisor as ‘. . . an anomalous (fourth) incisive tooth, possibly a milk tooth (¿)” (p. 117), but the severely undershot dentary, crushed and broad premolars, incompletely erupted C, inwardly folded upper incisors and the abnormal height of the dentary below the premolars have always gone unstated.

**DISTRIBUTION.** *M. longicaudata* is widely distributed throughout Irian Jaya and PNG in lower to mid-montane forests below 1800m (Fig. 29). Floristic details of collection localities appear in Archbold et al., (1942: 231-243).

**REPRODUCTION.** All pouches examined contained 4 teats. Lactating females had been collected in (dates included in parentheses) February (13,17), March (22), April (2,25), June (17, 27), August (10), December (1).

**DESCRIPTION.** **Mean Measurements (mm).** External: total length (head, body, tail) TL (¿) 439 (9) 345; hind foot (su) HF (¿) 36.90 (9) 32.00; ear (notch) E (¿) 20.86 (9) 20.00. Skull: basicranial length BL (¿) 46.45 (9) 37.55; M1 length (¿) 10.31 (9) 9.59; M2 width (¿) 2.82 (9) 2.61. (Table 4).

**Postmetatarsal and Calcaneal Pads.** Of all males (adult, juvenile and subadult) examined for postmetatarsal and calcaneal pads (N = 18), 44% (N = 8) exhibited a single postmetatarsal pad on both left and right hind foot. Three males (17%) exhibited a single postmetatarsal pad and a single calcaneal pad on both left and right hind foot.

Of all females examined for postmetatarsal and calcaneal pads (N = 4), 50% (N = 2) exhibited a single postmetatarsal pad on both left and right hind foot. No females exhibited calcaneal pads.

**P4 Morphology.** Only 3 juveniles were available for the study of deciduous premolars (AMNH 101970, AMNH 152035 and BMNH 33.6.1.71). In all cases L and RP were 3-rooted with the paracone and metacone coalescing into one major cusp. The protocone was well developed, as was stylar cup B and the metastylid. In the lower molars L and RP were single-rooted, formless spurs.

**Body Size.** Adult male *M. longicaudata* are significantly larger than adult females. (For basicranial length BL in males mean = 46.54mm, N = 28; for females mean = 37.55mm, N = 12, P<0.001). Females never attained the massive size seen in males, and the largest measure of BL recorded for an adult female (44.47mm) was less than the mean BL for males. Some of the largest specimens examined (ZM 60532, BL = 57.33 and ZM 13693, BL = 59.03) displayed dental abnormalities. In ZM 60532 an extra cusp is present on the posterior edge of the M4 protocone. In ZM 13693 two small caniniform teeth incline against the posterobuccal surface of the LC.

The largest of adult male specimens examined (i.e., mean BL=50mm, N=9) were from localities north of 6°00’S (i.e., 01°45’S - 5°28’S). Within this latitudinal range, body size varied significantly and inversely with altitude (e.g., at altitudes above 900m a.s.l. mean BL for adult males=45.97mm; at or below 900m mean BL=54.24mm (P<0.01). South of 6°00’S a similar inverse relationship existed between body size and altitude (e.g., at altitudes above 900m a.s.l. mean BL for adult males = 34.43mm; at or below 900m mean BL=46.56mm (P<0.001).

The largest adult female specimens examined (i.e., mean BL=40mm, N=3) were also from northern localities (i.e., 3°30’S, at Bernhard Camp, 75m - 850m a.s.l.). North of 6°00’S body size varied significantly and inversely with altitude (e.g., at altitudes above 900m a.s.l. mean BL for adult females=37.73mm; at or below 900m mean BL=41.40mm (P<0.05). South of 6°00’S there was no significant relationship between body size and altitude in females.

The smallest adult males examined (i.e., mean BL=38mm, N=7) were from localities in 4°48’S 145°20’E - 6°32’S 147°17’E (i.e., Kratate Mts, Atitau, Gang Creek, at 1220m - 1311m a.s.l.).

The smallest adult females examined (i.e., mean BL=35mm, N=3) were from localities in 3°39’S 135°56’E - 6°32’S 147°17’E (i.e., The Geroeders, Gang Ck, at 1375m-1525m a.s.l.).

**Premolar Diastemata.** In the upper premolar row of adult males, largest diastemata occurred most frequently between P2-P3 (41%, N=9) and P3-M1 (41%, N=9), while 18% (N=4) exhibited no diastema in the upper premolar row. No
specimen had the largest upper premolar diastema between $P_1-P_2$.

In the lower premolar row of adult males, largest diastemata occurred most frequently between $P_2-P_3$ (55%, $N=12$), less frequently between $P_3-P_4$ (36%, $N=8$), while 9% ($N=2$) exhibited no diastema in the lower premolar row. No specimen exhibited a condition where the largest lower premolar diastema occurred between $P_1-P_2$.

In the upper premolar row of adult females, largest diastemata occurred most frequently between $P_1-P_3$ (89%, $N=8$), while 11% ($N=1$) exhibited no diastema in the upper premolar row. No specimens exhibited a condition where the largest upper premolar diastema occurred either between $P_1-P_2$ or between $P_1-M_1$.

In the lower premolar row of adult females, largest diastemata occurred most frequently between $P_2-P_3$ (44%, $N=4$), less frequently between $P_3-M_1$ (11%, $N=1$), while 44% ($N=4$) exhibited no diastema in the lower premolar row. No specimen exhibited a condition where the largest lower premolar diastema occurred between $P_1-P_2$.

**SPECIMENS EXAMINED.** Astrolabe Ra., 450m, 9°30'S 147°20'E (AMNH 108558); Astrolabe Ra., 520m, 9°30'S 147°20'E (AMNH 108556-108557); Attitau, 1158m, 4°48'S 145°00'E (AMNH 198720); Bernhard Camp, 75m, 3°30'S 139°12'E (AMNH 152014-152018, AMNH152035); Bernhard Camp 4km SW, 850m, 3°30'S 139°12'E (AMNH 151997-2000); Derimapu Mt., 1220-1525m, 3°50'S 135°43'E (BMNH 1939.3235); Derimapu Mt., 1524m, 3°50'S 135°43'E (AMNH 101970-101971, BMNH 33.6.1.71-72, BMNH 336170); Derimapu Mt., 1830m, 3°50'S 135°43'E (AMNH 1939.3236); Derimapu Mt., 3°50'S 135°43'E (BMNH 33.6.1.84); Gang Creek, 1311m, 6°32'S 147°17'E (AMNH 194712); Gang Creek, 1372m, 6°32'S 147°17'E (AMNH 194710-11); Yapien L., 50m, 1°45'S 136°10'E (ZM 44228); Josephstaal, 4°44'S 145°00'E (AMNH 198721); Kratke Mts, 1200-1525m, 6°19'S 146°05'E (BMNH 50.1404-05); Kratke Mts, 1200m, 6'19'S 146°05'E (BMNH 50.1400, BMNH 50.1402); Kratke Mts, 1311m, 6°19'S 146°05'E (BMNH 50.1406); Kratke Mts, 6°19'S 146°05'E (BMNH 50.1401); Mabion Mt., 750m, 5°32'S 141°34'E (AMNH 105022); Namosado, 6°15'S 142°47'E (AMNH 152035); Oertzen Mts, 5m, 5°28'S 145°32'E (ZM 13693); Ogeremangim Sarvwagecl, 1785m, 3°39'S 135°56'E (ZM 45801); Siulu Valley, 290m, 6°30'S 147°43'E (BMNH 122.2.4.1); Sibul Valleys, 1250m, 5°00'S 141°10'E (RMNH 224, RMNH 16946); Sogeri, 450m, 9°25'S 147°26'E (AMNH 108554-5); Stephansort, 5m, 5°27'S 145°45'E (ZM 60532); The Gebroeders, 1225m, 3°39'S 135°56'E (AMNH 101972-31); Utakwa R., 761m, 4°24'S 137°12'E (BMNH 13.6.18.90); Waiamuru, 671m, 4°51'S 145°19'E (AMNH 198719); Wau, 1159m, 7°20'S 146°43'E (AMNH 221630); Wonoembai Aru Is, 100m, 6°00'S 134°30'E (RMNH 35153, BMNH 50.1403).

**Paramurexia** gen. nov.

*Phascogale* (in part) Temminck, 1824.

*Murexia* (subgenus) (in part) Tate & Archbold, 1937.

**TYPE AND ONLY SPECIES.** *Phascogale (Murexia) rothschildi* Tate, 1938: 58.

**GENERIC DIAGNOSIS.** Broad, black, dorsal body stripe which commences at the nose and terminates at the base of the tail. M1 very broad, with wide protocone and complete anterior cingulum, the anterior margin of this tooth is straight or anteriorly convex, but never indented or concave. Tail longer than head-body length.

It is distinguished from *Phascolosorex* by the narrow width of its body stripe and by its lack of reduced premolars, from *Myoictis* by its single dorsal body stripe and by its lack of reduced premolars, and from *Neophascogale* by its lack of reduced premolars and lack of a thickly-haired, white-tipped tail.

*Paramurexia* is separable from *Micromurexia, Paramurexia, Murexechinus* and *Murexia* by its single black, longitudinal head-body stripe and black facial mask.

**Paramurexia rothschildi** (Tate, 1938)

(Figs 30, 31)

*Phascologale (Murexia) rothschildi* Tate, 1938: 58.

**HOLOTYPE.** BMNH 1939.3233. Adult $\delta$ study skin and skull extracted (skin in good condition though slightly faded, skull in good condition).

**TYPE LOCALITY.** Head of the Aroa River, PNG, 8°50'S 147°06'E. Probably at 'about ± 4000 feet' (Tate, 1947). Coll. A.S. Meek, May 28, 1905.

**DIAGNOSIS.** As for genus.

**DESCRIPTION.** **HOLOTYPE. Pelage** (Fig. 30).

Fur of mid-back dorsal stripe 6mm long with basal half Slate Gray and apical half Fuscous Black. Similarly pigmented guard hairs 7.4mm long are interspersed through the dorsal stripe. Fur of the mid-back immediately outside the 'black' dorsal stripe is 6mm long with basal 3.7mm Slate Colour, median 1.5mm Clay Colour and apical 0.8mm Fuscous Black. Fur beside the stripe thus appears overall to be a Saccardo's Umber. Guard hairs are interspersed through this fur and are 7.5mm long on the rump and reduce to 3mm on the crown of the head. Fur on and below the shoulders, thighs, flanks and chin lacks the black tips or coarse guard hairs and these areas and the belly appear as Cinnamon Buff.
The black dorsal stripe is 15mm at its widest. A distinct head-stripe runs from the tip of the nose expanding in width to the mid-back. Another less distinct stripe originates among the mystacial vibrissae on each side. These Fuscous Black hairs progress posteriorly, passing over and under the eye and degenerate just to the anterior of the pinnæ. A distinct eye-ring results from the combined effect of these dark hairs and the skin of the eyelids, which is darkly pigmented. A narrow band of short, black eyelash hairs completely encircles each eye. The remainder of the fur under each eye is a light fawn (Tawny Olive). The soft, ventral fur is 7mm long on the belly. The basal 4mm is Mouse Gray and the apical 3mm is Cinnamon Buff. The belly appears overall as Chamois coloured. Forefeet and hindfeet are thinly covered with Buffy Brown hairs. The tail is weakly bicoloured with mid-dorsal hairs 1.6mm long (Fuscous Black) and dorsal tip hairs 2mm long (Fuscous Black). Mid-ventral hairs are 4mm long and increase to 8mm at the tip. The full ventral crest begins as Fuscous-coloured but becomes silvery toward the tip.

**Vibrissae.** Approximately 26 mystacial vibrissae occur on each side and are up to 30mm long. The more dorsal vibrissae are Fuscous Black, while those lower are colourless; supra-orbital vibrissae (Fuscous Black) number 2 (left) and 2 (right); genals (Fuscous Black and colourless) number 10 (left) and 10 (right); ulna-carpals (colourless) number 6 each side; submentals (colourless) number 2.

**Tail.** The tail is longer than head and body. It is thin and tapers toward the tip.

**Hindfoot** (Fig. 33). The interdigital pads are separate. The apical granule is enlarged, elongate and striate. A greatly enlarged auxiliary granule occurs outside the third interdigital pad. Hallucal and post-hallucal pads are fused and very elongate and broad. The metatarsal pad is greatly enlarged and elongate almost contacting the third interdigital pad. A very large, elongate calcaneal pad wraps around the heel. All pads are striate.

**Ears.** It was not possible to determine the state of the pinnae and supratragus from the type specimen. In other specimens, however, the supratragus is folded.

**Dentition** (Fig. 31). Upper Incisors: Left and (particularly) right I₁ are badly worn. They appear to have been narrow, peg-like and procumbent, taller crowned than all other incisors and separated from I₁ by a diastema. (In other specimens e.g., BMNH 50.1107, there is a small, auxiliary posterior cusp on I₁ which gives I₁ the appearance of the tip of a crochet-hook). In crown size I₁ > I₂ > I₃. All upper incisors lack buccal cingula yet the crowns and roots are easily identified. I₃ carries no anterior or posterior cusps. The roots of I₄ are narrow.

**Upper Canines:** C₁ is thick, short and blunt with an indistinct boundary between root and crown. There is no buccal or lingual cingulum, and there is no anterior or posterior cusp.

**Upper Premolars:** The premolar row is short and the premolars broad with P¹ and P² bearing heavy posterolinguinal lobes. The premolars are, however, not crushed against one another. Slight diastemata occur between C¹ and P¹, P² and P³. In crown height P³ > P² > P¹. Small anterior and posterior cusps occur on P¹ and P². A small posterior cusp is present on P₃.

**Upper Molars:** Molars are heavily worn. The posterior tip of P³ lies in the parastylar corner of M¹ but lingual to, and well below stylar cusp A. The anterior cingulum below stylar cusp B is short, broad and just complete. Stylar cusp B and the paracone are relatively worn and a minute protocone is present at the base of the paracone apex. The minute protocone is accompanied by a small bulge of enamel directly below it on the face of the anterior protocrista. The paracone on M¹ is very narrow and pinched. Stylar cusp C is not visible on either LM¹ or RM¹ and stylar cusp E is not visible. M¹ has a weak posterior cingulum.

In M² the broad anterior cingulum which contacts the metastylar corner of M¹ tapers quickly as it progresses down and along the base of the paracrista and finally degenerates labially to, and well before the trigon basin. No protocone is visible. M² lacks stylar cusps A, C and E. Stylar cusp D is slightly reduced, narrow and there is a weak posterior cingulum.

In M³ the anterior cingulum is as short as that of M², it becomes indistinct after covering 1/3 the distance between stylar cusp B and the base of the paracone. There is slight evidence of an anterior cingulum at the base of the paracone and there is no protocone or protocone enamel bulge. Stylar cusp D is reduced to a very long, sharp crest. Stylar cusp E is absent, as is stylar cusp C.

In M⁴ the metastylar corner is poorly developed. The broad anterior cingulum terminates quickly away from the metastylar corner of M³ and a posterior cingulum is absent. The protocone is much reduced and narrow.
occlusal view the angle made between the post-protocrista and the post-paracrista is close to 135°, reflecting little metacone development.

Lower Incisors: The small first lower incisor is present on the posterior surface of C1 upward projection and strong curvature from root to crown tip. It has weak buccal and lingual cingulation and no posterior cusp. Some thegotic wear is present on the posterior surface of C1.

Lower Premolars: Although the premolar row is short and the premolars broad, there are small diastemata between all premolars and between C1 and P1 and P3 and M1. All premolars are very strongly cingulated buccally and lingually. P2<P3<P1, P1 is very broad and strongly built with heavy labial, lingual and posterior cingula as well as an anterior cusp. The bulk of each premolar is concentrated posteriorly to a line drawn transversely through the middle of the 2 premolar roots. P1 (only) shows heavy posterolinguinal lobes.

Lower Molars: All molars are broad. The M1 talonid is wider than the trigonid and the anterior cingulum is absent. The paraconid is greatly reduced to a minute bump of enamel. The metacristid is roughly oblique to the long axis of the dentary while the hypocristid is very oblique. The cristid obliqua is very short and extends from the hypoconulid to the posterior wall of the trigonid intersecting the trigonid at a point slightly lingual to that point directly below the tip of the protoconid. The hypocristid terminates midway between the hypoconulid and the metastylid. There is no entoconid. From the base of the metaconid posteriorly, the talonid endoloph follows the line of the dentary until the base of the hypoconulid. The metaconid is badly worn.

In M1, the trigonid is slightly narrower than the talonid. The anterior cingulum is poorly developed, terminating lingually in a weak parastylid notch into which the hypoconulid of M1 is tucked. The buccal cingulum is strong. A narrow, very weak, posterior cingulum extends from the hypoconulid to the posterior base of the hypoconulid. The paraconid is worn and is the smallest trigonid cusp. There is no entoconid. The cristid obliqua extends from the hypoconulid to the posterior wall of the trigonid intersecting the trigonid at a point directly below the tip of the protoconid but well buccal to the metacristid fissure. The hypocristid extends from half way along the worn hypoconulid to the tip of hypoconulid. From the base of the metaconid posteriorly, the endoloph follows the line of the dentary axis.

In M1 the trigonid is slightly narrower than the talonid. A weak parastylid wraps around the hypoconulid of M2 and there is a very weak anterior cingulum on M4. Buccal and posterior cingula are as in M3 but more poorly developed. A reduced cristid obliqua intersects the trigonid at a point well lingual to the longitudinal vertical midline drawn through the tip of the protoconid, but just buccal to the metacristid fissure. There is no entoconid on M3. The endoloph on the talonid of M4 takes a more buccal orientation than that seen in M2. The rest of M3 morphology is as in M2 except that a small crest runs down from the hypoconulid to the beginning of the hypocristid.

In M4 the trigonid is wider than the talonid. There is no anterior cingulum. A posterior cingulum is absent. Of the three main trigonid cusps the metaconid is equal in height to the paraconid but both are dwarfed by the protoconid. The hypoconid of the M4 talonid is similar in size to M3. Between the hypoconid and the base of the metacristid, the cristid obliqua forms low, weak crest which degenerates before contacting the trigonid wall. A significant feature of the M4 morphology is the reduction of talonid crown enamel below the cristid obliqua which results in the talonid appearing (in occlusal view) as a narrow oblique spur jutting off the trigonid wall. There is no entoconid and no cusps represent the hypoconulid or hypoconulid. Small worn shelves, however, represent these cusps.

Skull (Fig. 31). The holotype exhibits minor fluting of the nasals. Alisphenoid tympanic bullae are widely separated and minutely inflated. The foramen pseudovalle is large and not bisected by the bridge of the alisphenoid. The eustachian canal opening is large. The premaxillary vacuity (3.87mm long) extends from the level of the I root back to the level of the posterior edge of the C\(^1\) root. The very small
Paramurexia, in which the moderately cingulated teeth are bulkier and shorter than in posterior cusp; 5, upper canines long, thin (but upper incisor row where I < I3 paraconid on M4 talonid width subequal to the trigonid; 16, rounded teeth are slightly crushed, and where cingulated lower premolar row in which the more 1, M4 touching P3; 4, I1 without a posterior cusp; 5, upper canines long, thin (but bulkier and shorter than in Micromurexia, Paramurexia, and Murexia). The root and crown are more differentiated than in those genera and there is no posterior cusp; 6, an upper premolar row in which the moderately cingulated teeth are uncrowded from C1 to P4, but where P3 usually touches P4 and M1; 7, P3 are rounded and show postero-lingual lobing; 8, M1 very broad, with wide protocone and complete anterior cingulum, the anterior margin of this tooth is straight or anteriorly convex, but not indented or concave; 9, M1 and M2 stylar cusp B large (slightly smaller than stylar cusp D in M1, subequal in M2); 10, M3 protocone more narrow than in Micromurexia but anterior cingulum complete; 11, M1 and M2 stylar cusp D a relatively low crest rather than a tall cone; 12, M4 metacone reduced more than in Micromurexia, Paramurexia and Murexia; 13, a lightly cingulated lower premolar row in which the more rounded teeth are slightly crushed, and where P3 is smaller than P2; 14, cingulated P3; 15, M2 talonid width subequal to the trigonid; 16, paraconid on M1 more reduced than in Micromurexia, Paramurexia and Murexia; 17, three very poorly developed cusps on the M4 talonid; 18, entoconid of M1 more reduced than in Micromurexia, Paramurexia and Murexia; 19, metaconists and hypocristists are not transverse to the long axis of the dentary; 20, skull elongate and domed; 21, fluted nasals; 22, poorly developed tympanic wing of the alisphenoid with contrasting expansion of the pars mastoidea and adjacent squamosal; 23, presence of a long postmetatarsal pad and calcaneal pad on hind foot; 24, tail thinly haired with short hairs and weak, light-coloured ventral crest developing at the distal end, the tail being longer than the head-body length; 25, polyoestrous and nipple number low (4); 26, penile morphology is simple.

In addition to those features noted in the generic diagnosis P. rothschildi is immediately separable from Micromurexia habbema by its larger (the ranges (R) associated with each measurement do not overlap, Table 5); basicranial length BL, zygomatic width ZW, basicranial width measured outside bullae OBW, inside bullae width IBW, rostral widths R-LC1, R-LM1, R-LM2, R-LM3, maxilla width R-PLM1, upper tooth row I-M1, lower tooth row I-M4, lower molar row M1-M4, and lower second molar width M2-W. P. rothschildi also differs significantly (P<0.001) from M. habbema as follows: longer upper premolar row P1-P3 (4.77: 3.85); longer dentary Dent (28.33: 21.46); longer lower premolar row P1-P3 (5.03: 4.08); longer tail T (168: 135); longer ear E (19.92: 16.95); longer hind foot HF (27: 22); strongly curved claws rather than slender, semi-straight claws; hindfeet with post-metatarsal pads.

P. rothschildi is immediately separable from Phascomurexia naso by its wider second molars. (For M2 in P. rothschildi mean=2.45, R= 2.32-2.69; in P. naso mean = 2.02, R=1.89-2.22. For M2 in P. rothschildi mean=1.56, R= 1.46-1.72; in P. naso mean = 1.31, R=1.23-1.43). P. rothschildi also differs significantly (P<0.001) from naso as follows: longer basicranial BL (35.41: 30.13); greater zygomatic width ZW (21.29: 17.45); wider basicranium measured outside bullae OBW (13.21: 11.57); wider inside bullae IBW (7.27: 5.81); wider rostrum R-LC1 (7.72: 5.91), R-LM1 (12.20: 10.57), R-PLM1 (14.79: 12.97), R-PLM2 (17.65: 15.48); wider maxillae R-PLM1 (10.08: 8.50); longer upper tooth row I-M1 (19.68: 17.32); longer upper molar row M1-M4 (8.71: 7.61); longer dentary Dent (28.33: 24.23); longer lower tooth row I-M4 (17.39: 15.18); longer lower molar row M1-M4 (9.48: 8.32); post-metatarsal pads on hind feet.

P. rothschildi is immediately separable from Murexechinus melanurus by its larger ears. (For E in rothschildi mean=19.92, R=19-21.5; in melanurus mean= 15.83, R=14-18). P. rothschildi also differs significantly (P<0.001) from melanurus as follows: longer basicranial BL (35.41:26.83); greater zygomatic width ZW (21.29: 16.89); wider outside bullae OBW (13.21:10.99); wider inside bullae IBW (7.27: 5.12); wider rostrum R-LC1 (7.72:5.43), R-LM1 (12.20:9.71), R-PLM1 (14.79:11.91), R-PLM2 (17.65:14.12); wider maxillae R-PLM1 (10.08:7.69); longer upper tooth row I-M4 (19.68: 14.88); longer upper premolar row P1-M2 (4.77: 3.37); longer upper molar row M1-M4 (8.71: 7.61); greater zygomatic width ZW (21.29: 16.89); wider outside bullae OBW (13.21:10.99); wider inside bullae IBW (7.27: 5.12); wider rostrum R-LC1 (7.72:5.43), R-LM1 (12.20:9.71), R-PLM1 (14.79:11.91), R-PLM2 (17.65:14.12); wider maxillae R-PLM1 (10.08:7.69); longer upper tooth row I-M4 (19.68: 14.88); longer upper premolar row P1-M2 (4.77: 3.37); longer upper molar row M1-M4 (8.71: 7.61).
FIG. 30. Holotype of *Paramurexia rothschildi* Tate, 1938. BMNH 1939.3233, study skin; A, dorsal view; B, ventral view. TL = 350mm; HB = 170mm; TV = 180mm; HF = 13mm.

*P. rothschildi* differs significantly (*P*<0.001) from *Murexia longicaudata* as follows: narrower skull at R-LM² (14.79: 17.80) and R-LM³ (17.65: 21.24); shorter upper tooth row 1'-M⁴ (19.68: 25.01); shorter upper premolar row P¹⁻³ (4.77:7.49); shorter upper molar row M¹⁻⁴ (8.71:10.10); shorter lower premolar row P₁⁻³ (4.07:7.92); 1¹ broad and claw-like rather than long, narrow and needle-like; premolar row short with premolars crowded and broad rather than premolar row uncrowded with premolars narrow and widely spaced; P⁴ single-rooted rather than three-rooted; M⁴ without a metacone rather than with a metacone; M₂ without an entoconid; hind foot with large auxillary granule outside the third interdigital pad, elongate metatarsal pad which

6.78); wider upper second molar M²W (2.45: 1.89); longer dentary Dent (28.33: 21.31); longer lower tooth row 1⁻⁴ (17.39:12.96); longer lower premolar row P₁⁻³ (5.03:3.45); longer lower molar row M₁⁻⁴ (9.48:7.37); wider lower second molar M₃W (1.56:1.22); face with black mask rather than rufous post-auricular patches; tail thinly haired with short hairs and weak, light-coloured ventral crest developing at the distal end rather than tail thickly haired a uniform black (sometimes dark brown) with ventral crest hairs long throughout.
FIG. 31. Holotype of Paramurexia rothschildi Tate, 1938. BMNH 1939.3233, cranium and dentary. Sex = m; BL = 40.12; ZW = 24.63; IO = 8.00; OBW = 14.69; IBW = 8.11; R-LC’ = 7.88; R-LM’ = 12.72; R-LM” = 14.86; R-LM’’ = 19.39; R-LM’T = 11.32; M’W = 2.69; I’-M’ = 21.31; P’3 = 5.15; M’1-M’4 = 18.65; P1,3 = 5.30; M1,4 = 9.61; M2,W = 1.72.

almost contacts the third interdigital pad, and highly developed, striate post-metatarsal and calcaneal pads rather than unspecialised.

REMARKS. Taxonomic History. Predictably, the history of this beautiful species is uneventful. Since its collection by A.S. Meek in 1905, institutional holdings of rothschildi have been bolstered only by the collections of F. Shaw Mayer (in 1940), W. Hitchcock and R. Schodde (in 1969) and A. Engilis/R.E. Cole (in 1985). Such holdings are even now represented by no more than approximately 16 specimens.

Its distinctive, consistent physical attributes combined with its poor representation in reference collections has conferred on it a stable taxonomic history.
The most interesting feature in the history of *rothschildi* is its anonymity from the time of its collection (1905) until Tate ‘came across two specimens’ (Tate, 1938) in the Tring Museum in the summer of 1937. Through the Director of the Tring Museum, Karl Jordan, Tate obtained the consent of Lord Rothschild to borrow the material for description. Tate retained the other specimen (paratype) for the American Museum of Natural History and described the species the following year. Rothschild died 27 August 1937, soon after Tate’s visit, and before the description was published.

By 1938 Thomas had described species such as *flavipes adusta* (1923), *godmani* (1923), *bella* (1923), *swainsonii mimetes* (1924), *minutissima similis* (1926), *minimus* (1906), *murex* (1913), *murex aspera* (1913), *melanura* (1899), *melanura modesta* (1912), *lorentzi venusta* (1921), *venusta rubrata* (1922), *doriae* (1886) and *daemonellus* (1904), all from the collecting efforts of Sherrin, Tunney, Wilkins, Stalker, Fritsche, the Pratt brothers, Kloss, Loria, and Meek. Some of these inveterate collectors were funded by Rothschild, and it was an established practice from the earliest days of the Tring Museum’s *Novitates Zoologicae* until around 1921, for Lord Rothschild to invite Oldfield Thomas from the British Museum to describe the small mammals from such collecting trips. Rothschild’s generosity in respect of such opportunities, and the subsequent donation of specimens to the British Museum, was always acknowledged by Thomas (Thomas, 1903a; 1903b; 1904; 1912; 1913; Thomas & Martin, 1920). The reason Thomas missed such an extraordinary and distinct marsupial as *P. rothschildi* is unknown.

**DISTRIBUTION** (Fig. 32). From 6, near-coastal localities in the SE tip of PNG, all between 09°56'S - 10°02'S and 147°00'E - 149°43'E.

Heron (1975) suggested that during the 1904-5 expedition that collected the holotype and paratype of *rothschildi*, A.S. Meek collected along the Dilava River and not the Aroa. Both the Dilava and the Aroa Rivers have their headwaters just south of Mt Tafa and both join about 10km from the coast. Heron argues that collections made at ‘the head of the Aroa (= Dilava) River’ would have been made at an altitude above 1200m which agrees with Tate’s (1947) estimate of ‘probably ± 4000 feet’.

Apparently occurring between 600-1400m.

**REPRODUCTION.** Two lactating females were available (BBM 109489, BMNH 50.1110). The former, collected 13 March 1985, had 3 lactating nipples. Three well-grown, fully furred young were taken from the nest occupied by this female. The latter, collected 21 December 1940 was labelled ‘with 2 embryos attached to the teats’. It is possible that the normal nipple number in *M. rothschildi* is 4, and that the 3 and 2 seen here result from small litters or are aberrant.

**DESCRIPTION.** *Mean Measurements (mm).*

External: Total length (head, body, tail) TL (♂) 325 (♀) 291; Hind Foot (♂) 27.25 (♀) 26.50; Ear (notch) (♂) 20.13 (♀) 19.50; Skull: basicranial length (♂) 36.78 (♀) 31.31; M1-4 (♂) 8.85 (♀) 8.29; M² width (♂) 2.46 (♀) 2.40. (Table 5).
Murexechinus gen. nov.

**Phascogale** (in part), Temminck, 1824.

**Antechinus** (in part) Macleay, 1841.

**TYPE AND ONLY SPECIES.** *Phascogale melanura* Thomas, 1899.

**GENERIC DIAGNOSIS.** M' very broad, with wide protocone and complete anterior cingulum, the anterior margin of this tooth is straight or anteriorly convex, but not indented or concave. Tail longer than the head-body length.

It is distinguished from *Phascolosorex* and *Myoictis* by its lack of a dorsal body stripe and by its lack of reduced premolars, and from *Neophascogale* by its lack of reduced premolars and lack of a thickly-haired, white-tipped tail.

*Murexechinus* differs from *Micromurexia* as follows: ears with rich rufous to light fawn post-auricular patches rather than lacking post-auricular patches; pelage shows definite change in colour from head to rump (usually agouti changing to warm russet) rather than uniform colour throughout; claws are thick and strongly curved rather than semi-straight and thin; tail thickly haired a uniform black (sometimes dark brown) rather than thinly haired and dorsoventrally bicoloured; I' broad, claw-like and heavily crowned rather than narrow, needle-like and minutely crowned; I' strongly cingulated buccally and lingually, blade-like and robust rather than uncinged,

**Hind Foot Morphology** (Fig. 33). Unique for its extraordinary development of proximal pads of the hind foot. All specimens showed a greatly elongate metatarsal pad with close approximation to the third interdigital pad. Posterior to the metatarsal pad, a large striate postmetatarsal pad may be present (e.g., BBM 109841, BBM 109845, BBM 109489), or a small postmetatarsal pad may occur in close approximation with a very large striate calcaneal pad (e.g., AMNH 108106).

All specimens examined exhibited an auxiliary pad outside the third interdigital pad of both left and right hind feet.

**SPECIMENS EXAMINED.** Agaun, 1km E, 1240m, 09°56'E 149°23'S (BBM 109481, BBM 109483, BBM 109485, BBM 109487); Agaun, 2.5km E, 1400m, 09°56'E 149°23'S (BBM 109489); Agaun at 4,500' (CM 12340); Aroa River (head of), 1220m, 08°57'E 147°00'S (BMNH 1939.3233, AMNH 108106); Bonen°, 1220m, 09°54'E 149°25'S (BMNH 50.1111-12); Enaena, Mt Simpson, 1372m, 10°02'E 149°34'S (BMNH 50.1108-10); Itara, Mt Simpson, 09°58'E 149°38'S (BMNH 50.1107); Opanabu (near Nowata), 610m, 10°01'S 149°43'E (CM 12287).

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