

A NEW GENUS, SPECIES, AND SUBSPECIES OF MARSUPIAL MICE (FAMILY DASYURIDÆ).

By

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(Plate xxxix.)

FROM time to time the Australian Museum has received small collections of mammals from Mr. F. L. Berney, of Queensland, which constitute very valuable additions to our material. Recently having occasion to check the identity of three pouched mice from the Richmond district, Queensland, presented by him in 1910, I found the specimens to be of unusual interest; one, which had been incorrectly relegated to *Phascogale minutissima*, proves to be a race of *Ph. ingrami*, providing the first record of the species' occurrence in Queensland, and warranting subspecific distinction, while the other two, belonging to the genus *Sminthopsis*, will be dealt with in another paper.

Since Thomas¹ described *Phascogale ingrami* from Alexandria, Northern Territory, Lönnberg² has described *Ph. subtilissima* from Noonkambah, Kimberley, north Western Australia. As both species, which are clearly differentiated by their characters and geographical range, exhibit an extraordinary flattening of the skull unique amongst marsupials, and described by Thomas as only equalled by four other mammals, three of which are bats, their retention within the genus *Phascogale* appears no longer justified. In a recent paper on the "External Characters of the Dasyuridæ," Pocock³ says: "From the evidence supplied by the variation in the rhinarium, ears, marsupium, and other characters, it seems probable that *Phascogale* will prove to be divisible into several genera," and that "until more spirit preserved material than is now available comes to hand for examination and comparison, it will be wiser to leave the genus in its present somewhat chaotic state."

While a critical examination of the spirit collection of pouched mice was being made, a specimen collected by the late Richard Helms during the floods on the Darling in 1890 was found which has the skull flattened in a manner similar to the above species and characters necessitating its description as new. There now exist at least three species clearly differentiated by the marked

¹ Thomas.—Proc. Zool. Soc., 1906, p. 541, pl. xxxvii, fig. 2.

² Lönnberg.—Kungl. Sv. Vet. Akad. Handl., liii, 1, 1913, p. 9.

³ Pocock.—Proc. Zool. Soc., 1926, p. 1082.

flattening of their skulls from *minutissima*, the only normal skulled *Phascogale* approximating their extremely small size. Being convinced that generic distinction is indicated, I propose to form a genus for the reception of the flat-skulled pouched mice which will serve to lessen the chaos referred to by Pocock. The genus may be briefly diagnosed as follows:

PLANIGALE, *gen. nov.*

Related to *Phascogale* but differentiated by the marked flattening of the upper surface of the skull (Pl. xxxix, figs. 1c and 2c), the height in front of the bullæ, from base to crown in profile, ranging from 3-3.5 mm., as compared with 4.7 in a skull of *Phascogale minutissima*, otherwise but little larger. Size small, even slightly less than that of *minutissima*, the smallest of the allied genus; the combined length of molars¹⁻³ not exceeding 3.2 mm. as opposed to 3.6 in an adult female *minutissima*, and the hindfoot ranging from 8.5 to 10, against 10.4 to 11.2 mm.

Rhinarium (Pl. xxxix, figs. 1e-f and 2e-f) simple in the species available to me, the median groove extending from the lip to the posterior border above; of the general shape figured by Pocock (*loc. cit.* text fig. 28) for *Ph. penicillata*, but without the definitely formed philtrum or traces of lateral grooves. Hallux present and clawless. Palms and soles naked and granulated; the central areas of the pads smooth and not striated. Tail short-haired, not tufted or incrassated. Mammæ variable in number.

Skull.—Remarkably flattened, with an almost straight dorsal profile. Interorbital region flat, with unridged edges; occipital crests almost obsolete. Nasals broadly expanded in their posterior half. Zygomata evenly convex outwards. Anterior palatine foramina not extending past centre of canines. Anterior portion of bullæ considerably larger than posterior.

Dentition.—Teeth of the normal number found in the allied genera *Phascogale* and *Sminthopsis*, except in *subtilissima*, in which the lower secutor (p_4) is absent.

Range.—North-western New South Wales, western Queensland, Northern and north Western Australia.

Genotype.—The form which I consider to be a subspecies of *ingrami*, which is described hereunder.

Other species, *subtilissima* of Lönnberg (*loc. cit.*) and a new species from north-western New South Wales, described in this paper.

PLANIGALE INGRAMI BRUNNEUS, *subsp. nov.*

(Pl. xxxix, figs. 1a-h.)

Similar to true *ingrami* but distinguished by its brown basal fur, comparatively longer tail, anterior palatine foramina extend-

ing to the level of the middle of the canines, definite posterior palatal vacuities, and the pm^1 being definitely smaller than the median premolar.

External characters.—Above, the general colour is a peculiarly speckled pale tawny-olive composed of the brown of the basal fur showing through the warm buff tips, over which is a wash of tawny-olive; basal two-thirds of fur of a definite shade of brown near light "mummy" (Ridgway),⁴ the upper third warm buff, with a tipping of tawny-olive. The tawny-olive is darkest just in front of the eye, and on the crown, shoulders, and centre of the back. Snout, from the rhinarium to between the eyes, of a deep olive-buff. Upper surface of hands and feet a very light greyish-olive.

Below, the general colour is olive-buff, the hairs on the chin of that colour throughout, but from the neck to the pouch the basal half of the fur is a definite brown, somewhat lighter than the basal fur above; the upper half of the fur is olive-buff. Tail of the same shade of light greyish-olive as the feet.

Ears short and broadly rounded (Pl. xxxix, fig. 1*d*), the height about equal to the width; laid forward, in a spirit specimen, they do not reach the posterior canthus of the eye, but extend about three-quarters of the distance from the anterior ear-base. Anterior base of the ear broadly overfolded, the apex obtusely rounded, followed by a slight but definite emargination behind the apex, the rest of the margin broadly rounded to the outer base. Supratragus large and untwisted, oblong, the anterior margin convexly sloping backwards, the posterior edge straight or slightly concave; when the ear is erect the supratragus is directed slightly upwards. The anterior ridge (Pocock) is not clearly defined and is sinuously folded and attached by a strand above to the floor of the anterior passage. The median ridge which bounds the anterior passage below is much thickened and upstanding; bent sharply upon itself at the posterior end, it extends only a short distance inferiorly, terminating about opposite the middle of the posterior ridge ("c" of Pocock's diagrams), not extending to the level of the lower margin of the inferior cleft as in *Ph. minutissima*. Inside of ear evenly covered with longish pale hairs, which form crests on the two laminated areas, one above and one below the supratragus.

Rhinarium hairless and of a more simple form (Pl. xxxix, figs. 1*e-f*) than in any of the types figured by Pocock (*loc. cit.*) and apparently differing from them all in having the median groove traversing the entire vertical extent, from the edge of the lip to the hind margin above. As is shown by Pocock for *Ph. lorentzi* and *Antechinomys spenceri*, there are no lateral or other

⁴ Ridgway.—Color Standards and Color Nomenclature, Washington, D.C., 1912.

grooves, but otherwise the rhinarium is quite differently shaped, as the philtrum is almost entirely suppressed, being merely indicated by the slight emargination of the rhinarium-sides and represented by a small projection on each side extending beyond the terminus of the median groove.

Manus and pes broad and fleshy, the granulations comparatively large and the pads unstriated.

Manus with six well developed pads, the four small interdigital ones coarsely granulated and surmounted by large, smooth, rounded central areas constituting almost the entire pad. Both carpal pads are represented by smooth areas of a different shape and larger than those of the interdigital pads, oblong-ovate, the outer or ulnar pad being larger and somewhat expanded distally, but not markedly crescentic or horseshoe-shaped.

Pes (Pl. xxxix, fig. 1*g*) broad-soled distally, with six well developed unstriated pads, the granulations comparatively large and sparse. The three interdigital pads consist of a large, oval, central area embedded in a ring of coarse granules. Hallucal pad distinct from, but situated close to the inner metatarsal pad, which is considerably broader but only slightly longer than the hallucal pad; outer metatarsal pad subequal in length to the inner one.

Tail slender, evenly haired, not tufted or incrassated, and comparatively longer than in the typical *ingrami*, being six-sevenths the length of the head and body as opposed to three-quarters in the typical form.

Pouch (Pl. xxxix, fig. 1*h*) approximating the relatively large development attained in *Ph. minutissima*, where there is a thickened crescentically curved flap almost encircling the wide mammary area; this flap is very deep in front, gradually becoming shallower laterally and fading out posteriorly so that it is absent in the middle line behind. Mammæ 6.

Skull. (Pl. xxxix, figs. 1*a-c*).—Apparently quite similar to the typical subspecies in its marked flattening, even convexity of the zygomata, wide expansion of the posterior half of the nasals, flat unridged interorbital region, and almost obsolete occipital crests. It differs, however, in having comparatively broader nasals, and in the extension of the anterior palatal foramina beyond the level of the front of the canines to between the middle of those teeth; also in having two distinct posterior palatal vacuities,⁵ which are situated opposite the inner corners of molars²⁻³, their length equal to the outer length of *m*³. The anterior palatal foramina are

⁵ Presence or absence of posterior palatal vacuities does not seem a very reliable diagnostic character, as they are easily overlooked; in my specimens the vacuities were covered with a leathery film which came away when pierced, leaving clear-cut openings.

very broad, their length being 1.5 and their combined breadth 1.3 mm. The hinder margins of the short premaxillæ rise rather abruptly, joining the nasals about 2 mm. from their tips.

Dentition.—Similar to that of the typical subspecies, but the p^1 is barely two-thirds the size of the median p^3 instead of being subequal to it as described by Thomas for his *ingrami*.

Dimensions of the holotype, preserved in spirit: Head and body, 65 mm.; tail, 57; hindfoot, 9; ear, from crown 6.5, from external base 8.5.

For cranial dimensions see table on p. 288.

Holotype.—Adult female, number M.2174 in the Australian Museum collection; associated with it is one young one with a total length of 46 mm. Donor F. L. Berney.

Hab.—Wyangarie, on the Flinders River, Richmond district, northern Queensland.

PLANIGALE TENUIROSTRIS, *sp. nov.*

(Pl. xxxix, figs. 2a-g.)

Of sombre colouration, the species is readily distinguished from *subtilissima* by its shorter tail and its dentition, and from *ingrami* by its more slender dimensions, darker colouration, and the comparatively marked narrowness of the nasals and elongation of the premaxillæ. From both allies it is distinguished by the narrower interorbital region.

External characters.—Above, the general colouration is darker than in *ingrami*, and more markedly speckled than in the *i. brunneus* form owing to the basal fur being darker, and the upper fourth lighter, with a tipping of black. The basal fur is unusually dark in spite of long preservation in spirit, about "blackish-brown 3" of Ridgway; the light upper fourth is near pinkish buff. Top of head, from rhinarium to between the ears, lighter than the back, about buffy brown, pencilled with darker brown hair-tips. There is a blackish whisker-mark along the lip from rhinarium to eye. Upper surface of hands and feet about tilleul-buff. Fur of under-surface somewhat lighter basally than that of the back, about fuscous. Hairs from chin to angle of jaws not parti-coloured and a shade of tilleul-buff; tips of fur from neck to vent pale olive-buff.

Ear (Pl. xxxix, fig. 2d) similar in general outline, but comparatively larger than in *ingrami brunneus*, reaching slightly beyond the posterior canthus of the eye when laid forward in a spirit specimen; without the definite emargination below the broadly rounded apex, and with a sharply defined triangular notch in the lower fourth of the margin which is not present in *i.*

brunneus. All the ridges are less pronounced than in *i. brunneus*, while the median ridge is not so sharply curved posteriorly, though it has a tendency to continue inferiorly to a level with the posterior end of the inferior cleft, as shown by Pocock for *Ph. minutissima*. The supratragus is shorter and more evenly convex than in *i. brunneus*, the antero-posterior length being 2.4 as opposed to 3 mm. in the latter form.

Rhinarium (Pl. xxxix, figs. 2e-f) very similar to that of *ingrami*, excepting that the inferior third is more elongate and its sides more concave, the suggestion of a philtrum being thus slightly more pronounced. The nostrils are more circular in outline than in the allied species.

Manus and pes not so broad and fleshy and with comparatively smaller granulations than in *i. brunneus*, but with a similar arrangement of unstriated central areas which are somewhat differently shaped.

Manus with six well developed pads, the four interdigital ones larger than in *i. brunneus*, the granulations smaller and more profuse, and the smooth rounded central areas constituting about half the area of the pad, instead of almost the entire pad as in the subspecies of *ingrami*. The two carpal pads are larger and more flattened than in the subspecies under comparison; the outer is the larger and the granules of the general surface encroach somewhat on the inner side proximally, tending to a hooked appearance of the central area anteriorly.

Pes (Pl. xxxix, fig. 2g) differing from that of *i. brunneus* in being decidedly narrower distally, in the greater elongation of the six well developed pads, and the finer and more profuse granulations on the sole. The smooth areas of the three interdigital pads embedded in finely granulated cushions, instead of forming almost the entire pad. Length of hallucal pad varying in a single individual; on one side it is smaller and separated by a decided space from the metatarsal pad, while on the other foot, though distinct, it is separated only by a slight groove from the metatarsal pad. The inner metatarsal pad is much longer, and narrower, than in *i. brunneus*, being about twice as long as the hallucal pad instead of almost subequal to it.

Tail slender, evenly haired, not tufted or incrassated, and three-quarters the length of the head and body.

Pouch with the well developed flap of skin encircling the mammary area in front and at the sides as figured for *i. brunneus* (Pl. xxxix, fig. 1h), but differing in possessing 10 or 12 mammae instead of 6; on the left there are six clearly discernible, while on the right there are only five. Careful examination suggests that five on each side is probably the normal formula, for, although

Thomas considers it more likely that a teat would be suppressed than an additional one grown, the crowding of the anterior nipples on the side bearing six indicates that the extra one may be an abnormality, the other row of five nipples being quite normal in appearance.

Skull (Pl. xxxix, fig. 2a-c).—Similar in general appearance to that of *ingrami*, but of narrower proportions and comparatively a little less flattened, the height from base to crown in front of the bullæ being 3.5 mm. as compared with 3.3–3.4 in *ingrami*; nevertheless it is remarkably flattened in comparison to the height of 4.7 given by Thomas for a specimen of *Phascogale minutissima* of similar size. The nasals are decidedly longer and narrower than in *ingrami*; their greatest width only equals that of the nasals of the much smaller *subtilissima* in which their length is only 5 mm., as compared with 6.9 in this species. The comparative narrowness of the skull is further indicated by the lesser width of the interorbital region and braincase, and the narrower palatal foramina; the greatest combined width of the anterior palatal foramina is 1 mm. as opposed to 1.3 mm. in the holotype of *i. brunneus*, though the foramina lengths are the same. The premaxillæ are decidedly more elongated than in *i. brunneus*, their hind margins rising obliquely backward to a point about 2.6 mm. from the tips of the nasals.

Dentition.—Much as in *ingrami*, but with the p^4 of a different shape, considerably shorter antero-posteriorly, higher, and without the elongated posterior heel or talon present on that tooth in the allied species. The two anterior upper premolars are not subequal as in the typical *ingrami*, p^1 being about two-thirds the size of p^3 as in *ingrami brunneus*.

Dimensions of the holotype, preserved in spirit: Head and body, 67.5 mm.; tail, 50.5; hind foot, 9; ear, from crown 6, from external base 8.9.

For cranial dimensions see table on p. 288.

Holotype.—Apparently adult female, number M.3856 in the Australian Museum collection, which, with a three-quarter grown female, M.3857, was collected by the late Richard Helms.

Hab.—Collected at Bourke or Wilcannia, New South Wales, during the Darling River floods, in May or June, 1890.

ACKNOWLEDGMENTS.

I desire to express my appreciation of Mr. Berney's efforts as a collector, which have enabled me to record for the first time the

occurrence of a race of flat-skulled marsupial mice in Queensland, and my indebtedness to Miss Joyce K. Allan for the drawings illustrating this paper.

EXTERNAL MEASUREMENTS OF THE SPECIES AND SUBSPECIES OF *Planigale*.

| | <i>ingrami</i> <i>ingrami</i> ♂ | <i>ingrami</i> <i>brunneus</i> ♀ | <i>tenuirostris</i> ♀ | <i>subtilissima</i> ♂ |
|-------------------------------------|---------------------------------------|--|--------------------------|--------------------------|
| Head and Body | 80 | 65 | 67.5 | 45 |
| Tail | 60 | 57 | 50.5 | 51 |
| Hindfoot | 10 | 9 | 9 | 8.5 |
| Ear, from crown ⁶ | — | 6.5 | 6 | 6 |
| Ear, from post. base | 9 | 8.5 | 8.9 | — |

CRANIAL MEASUREMENTS OF THE SPECIES AND SUBSPECIES OF *Planigale*.

| | <i>ingrami</i> <i>ingrami</i> ♂ | <i>ingrami</i> <i>brunneus</i> ♀ | <i>tenuirostris</i> ♀ | <i>subtilissima</i> ♂ |
|--|---------------------------------------|--|--------------------------|--------------------------|
| Greatest median length ... | 18 | 16.7 | — | 15.5 |
| Basal length | 17 | 15.8 | 16.5 | 14.5 |
| Zygomatic breadth | 9.7 | 8.9 | — | 8.4 |
| Length of nasals | 6.6 | 6.3 | 6.9 | 5 |
| Breadth of nasals | 3 | 3.1 | 2.6 | 2.6 |
| Interorbital breadth | 3.8 | 3.8 | 3.5 | 4 |
| Breadth of braincase | 8.5 | 8.3 | 8 | 7.3 |
| Palate length | 8.7 | 8.1 | 8.7 | 7 |
| Length of upper tooth-row ... | 8 | 7.4 | 7.9 | 7 |
| Length of lower tooth-row ... | 7.2 | 7 | 6.8 | 6.5 |
| Length of molars ^{1,3} | 3.1 | 3.2 | 3.2 | — |
| Depth of skull in front of bullæ | 3.3 | 3.4 | 3.5 | 3 |

⁶It is not clear from which point the ear measurements of *i. ingrami* and *subtilissima* have been taken, though comparison with dimensions taken by myself suggest that the former is from the posterior base, and the latter from the crown as adopted in the British Museum catalogue dimensions by Thomas.