

“THE” COMMON STRIPED PALM SQUIRREL.

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(WITH A PLATE.)

(Read before the Bombay Natural History Society on 6th July 1905.)

Blanford in his “Mammals” describes the common striped palm squirrel under the name of *Sciurus palmarum*, L.

Since the “Mammals” was published, however, Mr. Thomas, in the P. Z. S. (1897, p. 925), referring to a paper published by Dr. Forsyth Major, on the subdivisions of the *Sciuridae* (P. Z. S., 1893, p. 179), wrote:—“This general arrangement being founded on such a careful and highly competent examination of the skulls and teeth, it was evident that systematic workers would have to consider how best they could utilise Dr. Major’s invaluable contribution to the subject. I would now venture to suggest that all the subgenera (with the exception of *Atlantoxerus*) in Dr. Major’s scheme should be recognised, for ordinary systematic purposes, as full genera, especially as all of them have long been considered as perfectly natural groups and have been arranged as such in the revisions of Trouessart and other authors.” Again in the “Ann : and Mag :” (1898, Ser. 7, Vol. II, p. 249), Mr. Thomas wrote:—“For the information of workers in the East, to whom all the literature may not be accessible, it may be noted that by the recent splitting up of *Sciurus* into several genera the Indian squirrels—taking Blanford’s ‘Mammals’ as a standard—*S. bicolor*, *indicus*, *macrurus* belong to *Ratufa*; the species (except *rufigenis* and *lokriah*) from *ferrugineus* to *atridorsalis* and also *maclellandi* to *Sciurus*; and *S. rufigenis*, *lokriah*, *palmarum*, *tristriatus*, *layardi*, *sublineatus*, and *berdmorei* to *Funambulus*.”

Hence in the Table on p. 370 of the “Mammals” if *lokriah* and *rufigenis* be put under C and *maclellandi* under B. we shall have—

A = Gen. *Ratufa*.

B = Gen. *Sciurus*.

C = Gen. *Funambulus*.

As a first step then our common striped palm squirrel becomes *Funambulus palmarum*. But, since I obtained, in 1898, two striped squirrels, within $\frac{1}{2}$ mile of each other, on the north bank of the Tapti River, about 40 miles from Surat, I have felt convinced that more than one form was lumped under the specific name *palmarum*. Lately

I have had an opportunity of examining the skins and skulls in the National Collection at South Kensington. Though the material available for study is unfortunately still very limited, there is enough to show very clearly that there are at least two quite distinct forms : —

- A. With three pale dorsal stripes and a band of short, bright rufous hairs along the underside of the midrib of the tail.
- B. With an additional pale stripe on each side, sometimes indistinct but always discernible, and having no rufous band of short hairs under the tail.

My difficulty has been to decide which of these forms is the *palmarum* of Linné and to settle the question I have gone rather thoroughly into the literature.

Clusius, in 1606, described an animal under the name of *Mustela africana*. His description is confessedly based on a picture and some notes, furnished to him by a friend, Jacobus Plateau (of Rouen?) He wrote of it “ in utrâque mandibulâ binis longioribus dentibus in anteriore rictus parte præditus : comedens, clunibus insidebat, anterioribus pedibus cibum tenens et versans,” which rather indicates a squirrel. He added : “ Cauda quidem attollens, minime tamen supra caput retrorquans sed in latum nonnunquam valde explicans, pavonis caudæ pœne instar.” Any one who has watched the palm squirrel will recognise this as a fair description of him, by a man who was mentally comparing him with the European squirrel. All this Clusius must have got from his friend’s notes, but when he adds “ pedes in quinque digitos erant divisi, quaternos antrorsum spectantes quintum autem brevem, retrorsum spectantem ” he certainly was describing from his picture.

There followed notices of this *M. africana* by —

Eusebius Nierembergius in 1635.

J. Jonston in 1657.

J. Ray in 1693.

but all these were merely paraphrases of, or extracts from, the original account by Clusius.

In 1762 Brisson published his “ *Regnum Animale*, ” from which I quote in full :—

“ *Sciurus palmarum* ; *Mus palmarum* (Vulgo.)

Sciurus coloris ex rufo et nigro mixti tœniis in dorso flavicantibus—
L’écureuil Palmiste.

Raj. Syn. quad., p. 216.

Clus. Exot. p. 112.

Johnst. Quadr., p. 105.

Eus. Nieremb. Fig., p. 172.

Pili corporis ex rufo et nigro variegantur : pili caudæ supra ex nigro et flavicante, infra vero sunt ex flavo rufe, cum duabus tœniis longitudinalibus in utroque latere nigris, altera tœnia etiam longitudinali albicante utrinque terminatis : tres sunt, insuper in dorso, secundum ipsius longitudinem, tœniæ flavicantes, in utroque scilicet latere una, alter in medio dorso.

Habitat—ASIA, AFRICA, ET AMERICA.”

There is a mark against this species which, as explained in his preface, means a species “quam propriis oculis examinare mihi fiat concessum.”

There are three points in this description to which I would call attention, viz. :—

1. For the first time 3 pale dorsal stripes are mentioned.
2. The rufous band along the midrib of the tail below is distinctly mentioned.
3. No mention is made of the three-toed fore-feet.

In 1766 was published the XII edition of Linne’s “Systema Naturæ” (*S. palmarum* is not mentioned in the X edition). The notice of this species (Lib. 1, p. 86) is as follows :—

Sciurus palmarum.

S. subgriseus, striis tribus flavicantibus, caudaque albo nigroque lineata.

Sciurus coloris ex rufo et nigro mixti, lineis in dorso flavicantibus. Briss : Quad : p. 156.

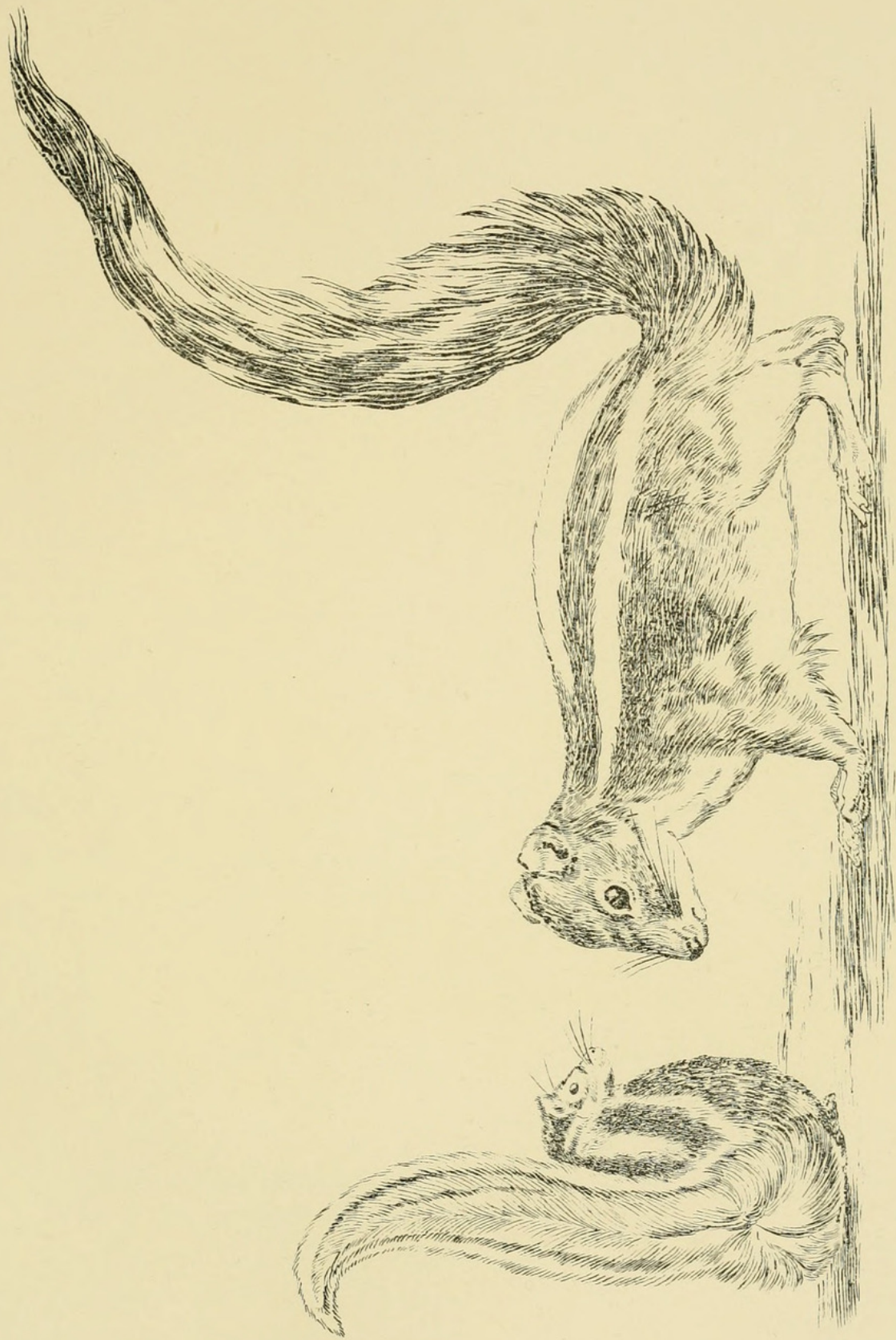
Mustela africana. Clus : Exot : p. 112. Raj : Quad : p. 216.

Habitat—AMERICA, ASIA, AFRICA.

Cauda disticha erecta non abumbrans Pedes 4-5. Auriculæ rotundæ.”

In the absence of any specific indication in his own description the fact that Linne quotes Brisson as his authority establishes the form with 3 pale dorsal stripes and a rufous band under the tail as the typical *palmarum*, L.

The puzzling point is where did Linne get his character “Pedes 4-5” ? for none of his authorities mention it. The only place he could have found it was Vol. X of Buffon’s ‘Histoire Naturelle’ which was published in 1763. I extract from it a description of “*Le Palmiste*.”



" Le Palmiste qui a servi de sujet pour cette description n'était pas adulte.....Il y avait cinq doigts aux pieds de derrière et seulement quatre á ceux de devant.....La couleur du poil de la queue était m  lee de gris et de brun noir  tre qui semblait former des anneaux forts   troits, chaque poil avait du noir pr  s de la racine, du gris audessus du noir et enfin du noir    la pointe.

J'ai observ   un autre palmiste qui   tait empaill   et qui m'a paru de m  me esp  ce que le pr  c  dentLes poils de la queue formaient un panache, chaque poil   tait de couleur rousseatre    son origine, il avait ensuite du noir, du rousseatre, du noir et enfin l'extr  mit     tait blanche."

I have seen no specimen in which the hairs of the tail were tipped with black. But whatever the immature specimen may have been the other was almost certainly the same form as the one described by Brisson and possibly the same specimen. Moreover Buffon's plate shows, as clearly as is possible in an uncolour picture, the rufous band of short appressed hairs on the undersurface of the midrib of the tail. (*Vide* plate which is carefully copied from Buffon's picture, omitting only the background, and for which my acknowledgments are due to Miss Edwards.)

Neither Brisson nor Buffon gives an exact locality for the specimen on which he bases his description. But it would probably be the E. coast of Madras ; at any rate in the absence of any more exactly indicated locality I think we may accept the three striped form of Madras as the typical form of *Funambulus palmarum*, L. and I propose to make a new species for the five striped form under the name of *Funambulus pennanti*.

FUNAMBULUS PALMARUM, L.

Sciurus penicillatus, Leach, Zool : Misc : Vol. 1., p. 6, 1814.

Funambulus indicus, Lesson, Ill : de Zool : Pl. XLIII, 1832.

The individual hairs on the upper surface of the body, including the face, vertex (which however is often strongly tinged with red). Shoulders and flanks are particoloured, or broadly ringed, with black and dirty white or pale buff, the general result is a very finely speckled appearance varying from red-brown to grey-brown according as the pale portions of the hairs approach more or less to buff. On the back there is a 'saddle-mark' area always darker than the general body colour and usually much redder or browner. This variation in colour

however seems to be purely individual for in the fine series of specimens from Trivandrum there is a specimen in which this saddle-mark differs from the body colour in little more than shade and even that only slightly while in another it approaches black as in *F. tristriatus*. Waterh. and there are all intermediate grades. Down the centre of this saddle-mark, from the nape to the base of the tail is a pale coloured streak, which corresponds in colour with the paler portions of the body hairs, just inside the lateral edges of the saddle-mark are two similar streaks, parallel to the central one; the exact distance inside the edge of the saddle-mark varies in different individuals. The lower surface of the body from the chin to the vent and including the inside of the legs is dirty white to pale buff; where the upper and lower colours meet along the sides there is often an area on which the pale belly colour is strongly tinged with brick red. Lesson's plate of *F. indicus* represents an exceptionally pale animal and shows the pale colour extending from under the chin upwards over the cheeks to the eyes, Leach's plate of *penicillatus* does not; both forms are present among the Madras, &c., specimens. The rump and lower surface of the tail are coloured a bright cinnamon brown, the hairs on this red band of the tail are short like those of the body while the rest of the tail hairs are long (1 inch or more), and annulated, commencing with buff at the root, then black, white, black and well marked white tips. Looked at from above the tail appears to be obscurely, transversely barred black and white; while from below there is seen a central rufous band bordered with black which again is bordered with white.

Length of head and body about 150 mm. ; tail about the same.

Habitat. — MADRAS.

F. tristriatus, Waterhouse, is apparently the forest form of *palmarum* and the latter is probably the former adapted to civilisation, though having been named earlier it is senior 'systematically' to *tristriatus*. *F. tristriatus* is much the darker of the two, the palest specimen I have seen being darker than the darkest *palmarum*; the rufous vertex of the head which is without exception in *tristriatus* is often absent in *palmarum*; and the obscurely barred appearance of the tail of *palmarum* is wanting in *tristriatus*, owing to the greater length of the white tips of the hairs. Waterhouse gave no locality for the type of his *tristriatus* except 'S. India' but there are specimens in the National Collection from Madras (? Presidency) and Travancore. I have tabulated the

skull measurements of these as well as of the corresponding forms of *palmarum* and of the specimen from Guzerath referred to at the commencement of this paper. I have taken the measurements of the type *tristriatus* from its skull but I find they agree almost exactly with those given (in inches and lines) by Waterhouse in his paper in P. Z. S., 1889, p. 118.

	<i>F. tristriatus.</i>			<i>F. palmarum.</i>		
	Type.	Average Madras specimens.	Average Travancore specimens.	Average Madras specimens.	Average Travancore specimens.	Guzerath specimens.
Greatest length of skull	40·75	40·25	44	37·5	40·5	40
Zygomatic breadth	24	24	25	21	23	23·5
Interorbital breadth... ..	13·25	13	13·5	11	11·5	11·5
Length of nasals	12·5	13	14	12	12	12
L. of upper tooth row	9	8·5	9	7·5	8	8
Palate from henselion	19	19·25	20·5	17	18	18

The way in which the increased skull measurements of Travancore *tristriatus*, over the type, are repeated in *palmarum* is significant, and I think justifies the separation of the Travancore form as a geographical race or sub-species.

F. palmarum, *L. comorinus*..... .. sub. sp. n.

Differs from *typicus* by its much soberer grey colouration and by its larger skull measurements as given above.

Habitat.—TRAVANCORE.

Type. ♀ B. M. 95. 10. 9. 19. Obtained by Mr. H. Ferguson at Trevandrum, 23rd January 1895. Many specimens.

FUNAMBULUS PENNANTII. sp. n.

Palm squirrel. Pennant, Hist. Quad. Ed. III, p. 149, 1793.

Habitat.—Mandvi Taluka of Surat District.

Type : ♂ B. M. 98. 4 2. 25. original number 45, obtained by myself, 27th February 1898. Length as in *palmarum*.

The body colouring is very much as in *palmarum*, *comorinus* but along the outside edge of the 'saddle mark,' on each side there is a supplementary pale stripe. This stripe being bounded on the outer



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