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## XXXI.—On the Bats of the *Rhinolophus macrotis* Group, with Descriptions of Two new Forms

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XXXI.—On the Bats of the *Rhinolophus macrotis* Group, with Descriptions of Two new Forms. By KNUD ANDERSEN.

*Rhinolophus hirsutus*, sp. n.

*Diagnosis*.—Allied to *Rh. macrotis*, but with considerably larger ears and longer tail. Forearm 41.7 mm. *Hab.* Central Philippine Islands (Guimarás).

Length of ears 21, greatest breadth of ears about 18 mm.; in two adult *Rh. macrotis* from Masuri the measurements are 19–20.8 (length) and 15.5–16.5 mm. (breadth). Tail equal to  $1\frac{1}{2}$  the length of the lower leg (24 as against 19 mm.); in *Rh. macrotis* scarcely equal to the lower leg (17 as against 18.8 mm.).

The skull is slightly larger than in *Rh. macrotis*, but quite of the same shape.  $p_2$  half in row;  $p^2$  in row, with a distinct, pointed cusp.

*Type*.—♀ ad. (in alcohol). Guimarás, Central Philippine Islands. Collected by J. B. Steere, Esq. U.S. Nat. Mus. no. 105187.

*Rhinolophus Pearsoni chinensis*, subsp. n.

*Diagnosis*.—Similar to *Rh. Pearsoni* from Darjeeling and Masuri\*, but with markedly shorter tibia, slightly smaller skull, narrower maxillar width, shorter mandible and tooth-rows. Forearm 52.7 mm. *Hab.* Fokien (China).

Length of lower leg 26 mm. (in the typical form 29); maxillar width 9.2 (9.7–9.8); length of mandible 16.8 (17.7–17.9); maxillar tooth-row 9.5 (9.8–10.2); mandibular tooth-row, exclusive of incisors, 10.3 (10.8–11.1). Dentition as in the typical form:  $p_3$  external;  $p_2$  and  $p_1$  almost in contact;  $p^2$  in the tooth-row.

*Type*.—♂ ad. (skin). Kuantun, Fokien, April 16th, 1898. Collected and presented by J. De La Touche, Esq. Brit. Mus. no. 98. 11. 1. 2.

\* To judge from descriptions and figures of Dobson's *Rh. yunnanensis*, from Hotha, Yunnan (J. A. S. B. xli. pt. 2 (1872), p. 336; and Yunnan Exp. i. (1879) p. 93, pl. iv. fig. 1), and A. Milne-Edwards's *Rh. larvatus*, from Moupin, Szechuan (Mamm. Tibet (1872), p. 248, pl. xxxvii. fig. 1, pl. xxxvii. c. fig. 1), these bats are indistinguishable from the typical *Rh. Pearsoni*. They are, at all events, different from the Chinese form described above.

*Wing-indices.*

	<i>Rh. macrotis</i> , <i>Rh. hirsutus</i> . 4 specms.	<i>Rh. Pearsoni</i> . 4 specms.	<i>Rh. ethiops</i> , <i>Rh. Hildebrandti</i> , <i>Rh. fumigatus</i> . 25 specms.
Forearm.....	1000	1000	1000
3rd finger, metacarpal ..	703	656	632
"    1st phalanx ..	304	333	306
"    2nd phalanx ..	371	452	537
4th finger, metacarpal ..	736	715	726
"    1st phalanx ..	213	213	191
"    2nd phalanx ..	245	296	319
5th finger, metacarpal ..	731	739	742
"    1st phalanx ..	243	239	238
"    2nd phalanx ..	243	327	269

*General Remarks on the Rh. macrotis Group.*

The skull of *Rh. macrotis* is of the general shape characteristic of all the more primitive species of the genus: very narrow temporal fossa and low sagittal crest; nasal swellings not especially modified, the median anterior swellings but a trifle larger than usual; basioccipital not more strongly narrowed than in the majority of species. *The palatal bridge is remarkably long*, equal to  $\frac{1}{2}$  or  $\frac{3}{4}$  of the maxillar tooth-row. Dentition primitive: upper canine and  $p^4$  widely separated;  $p^2$  small (as usual), but with a distinct cusp.

The essential external characters are the long and broad, almost parallel-margined (tongue-shaped) sella; *the long and dense hairing on the front face of the sella*; the very slightly projecting, *rounded* connecting-process, *starting from a point below the summit of the sella*; the cuneate lancet; the broad horseshoe; the three mental grooves; the broad ears; the quite primitive wing-structure: fifth metacarpal a trifle *shorter* than the fourth, III.<sup>2</sup> (as well as the other distal phalanges) very short.

Among the now existing types of the genus *Rh. macrotis* has no closer relatives than the *Rh. philippinensis* group. We find in this group an unusually long palatal bridge; the same tendency to enlargement of the nose-leaves; the shape of the sella (apart from the lateral expansions, of course) strongly recalls that of *macrotis*; the connecting-process is broadly rounded and starting from a point below the summit of the sella, as in *macrotis*; the lancet long and cuneate; the ears very much of the *macrotis* type; the mental grooves

and wing-structure on practically the same stage as in *macrotis*. But *philippinensis* has retained a somewhat more primitive dentition ( $p^2$  unusually well developed), and the base of the central nose-leaf is peculiarly modified.

*Rh. hirsutus* is but a Philippine representative of the *macrotis* type; the ears are still larger, the tail longer.

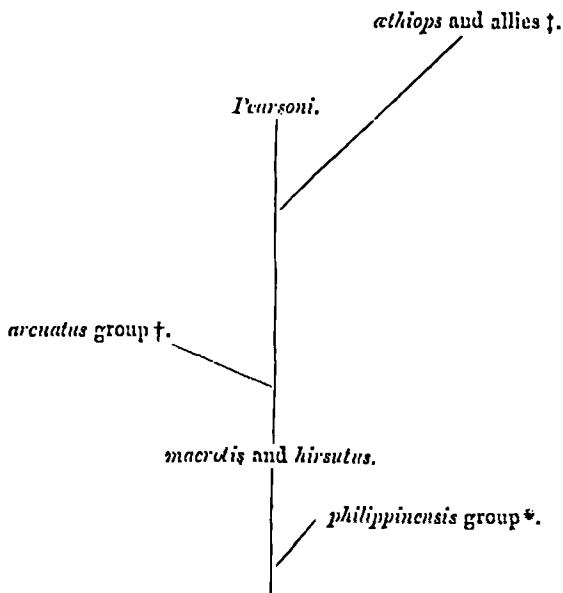
*Rh. Pearsoni* is closely related to *Rh. macrotis*, but in several respects considerably more highly developed. The temporal fossa is decidedly wider; the sagittal crest higher; the palatal bridge shortened. The shape of the nasal swellings very much as in *macrotis*. The only progress in dentition is a slight reduction of  $p^2$ ; also the cusp is less distinct; but the tooth is still completely in row. The lateral borders of the sella are peculiarly crenulate; the ears smaller; the lateral mental grooves quite obliterated. *The third metacarpal is much shortened*, the fourth less so, making the fifth metacarpal decidedly the longest of all; all the terminal phalanges are much lengthened. On the whole this wing-structure is rather similar to that of *Rh. ferrum-equinum*, a species with which *Rh. Pearsoni* has no closer affinities.

*Rh. æthiops* (Angola), *Hildebrandti* (Mazoe to Uganda), and *fumigatus* (Kitui to Abyssinia) are Ethiopian representatives of *Rh. macrotis*. There is a most striking resemblance in the nose-leaves; the horseshoe, the sella, the connecting-process, the lancet, differ in nothing but the larger size; *the long and dense hairing on the front face of the sella, characteristic of macrotis, is retained in the African species*; the shape of the ears is the same. As in *Rh. Pearsoni*, the mental grooves are reduced to one. The wing-structure differs from that of *Rh. macrotis* in having the fifth metacarpal somewhat longer than the fourth and third (by the combined effect of a slight shortening of these latter and a slight lengthening of the former), and the second phalange of the third and fourth fingers much lengthened. The modification of the skull noticed above when passing from *Rh. macrotis* to *Rh. Pearsoni* is found again in the Ethiopian species: wide temporal fossa, more projecting sagittal crest, shortening of the palatal bridge. In front of the anterior nasal swellings is developed a very narrow thin brim of bone, forming the upper border of the nasal openings (as in the more differentiated members of the *philippinensis* group). The dentition is extremely highly developed:  $p_3$  and  $p^2$  pushed out to the external side of the tooth-row, or completely lost.

As will be observed from the above, the Ethiopian species

here under consideration are on a higher level of development than the Oriental *Rh. macrotis*: in several important cranial characters, in the dentition, in the wing-structure. I have pointed out elsewhere that also the other Ethiopian *Rhinolophi*, without any exception, have their *more primitive* relations in the Oriental Region. Thus the general conclusion arrived at may now be briefly formulated as follows:—*All the Ethiopian representatives of the genus Rhinolophus are of Oriental origin.*

The subjoined diagram gives a view of the probable inter-relations of the species and groups reviewed above:—



### XXXII.—*Descriptions and Records of Bees.*—II.

By T. D. A. COCKERELL, University of Colorado.

#### *Euryglossa ephippiata*, Smith.

Queensland, no. 91. 61, also labelled Ridg. 11.93; 701. ♀.

Except for the smaller size, it has a strong superficial resemblance to *Callomelitta picta*. The character of the

\* Ann. & Mag. Nat. Hist., August 1905, p. 243.

† *Supra*, p. 281.

‡ *Op. cit.* (7) xv. (1905) pp. 75-76 ("Remarks").