

## TWO NEW RACES OF INDIAN BATS.

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Through the kind offices of Dr. Bains Prashad, Director, Zoological Survey of India, I have had the loan of the entire study collection of bats in the Indian Museum for identification. In going over this material, I find the two following races which appear to be undescribed.

### ***Pteropus hypomelanus maris*, subsp. nov.**

*Type*.—An adult female No. 10932, Indian Museum, in spirit with the skull separate and dry, from Heratara, Addu Atoll, south end of Maldive Archipelago, Indian Ocean. Donated by the Marine Survey of India, 1922.

*Description*.—Externally characterized by the small size (forearm 111 mm.), nearly naked tibia, relatively long ear reaching when laid forward nearly to the eye, and by the normal color pattern.

Pelage rather dense and soft, with a wooly appearance. Upper side of tibia practically naked, but with scattered appressed hairs visible with a lens. Wings attached high up near the center of the back, where they are about 25 mm. apart. On the upper surface the hairy coat extends out on the proximal part of the wing membranes over an area about 50 mm. wide in the middle of the back, and to the proximal two-thirds of the upper side of the humerus. Twelve fasciæ are present in the plagiopatagium. The latter originates from the dorsal side of the foot between the bases of the second and third digits. Tail membrane not continuous in the middle, but interrupted for a space of about 10 millimeters. Its proximal half on each side is thickly clothed with hair above, from a line joining its median point of origin to the middle of the tibia, but ventrally only the proximal third is covered. Calcaneum well developed, and as long as the metatarsus. Ears normal, unreduced, projecting noticeably above the fur; when laid forward they fall 2 or 3 mm. short of the posterior corner of the eye. Their inner margin is regularly convex, as is also the basal two-thirds of the outer border, but the upper third of the latter is very slightly concave to the bluntly pointed tip.

*Color*.—As nearly as can be made out in the spirit specimen, the head is buffy gray, browner on the face and darkening on the interramal region; nape and shoulders ochraceous buff, deepening to ochraceous-rufous on the sides of the neck. Chest and abdomen similar but slightly duller, brownish rufous. Lower surface of humerus covered with straight dark-brown hairs on its basal two-thirds, the same color extending to the flanks and anal region. Back, from the level of the base of the humerus, and including the proximal two-thirds of the latter, dark brown with a slight admixture of buffy hairs, which become more

abundant and on the rump predominate, giving the posterior part of the body an ochraceous color.

*Skull.*—The cranium is of the usual pteropine type and of rather light, delicate proportions. The alveolar line of the upper jaw, if projected backward, passes just above the foramen magnum, indicating the considerable downward bending of the posterior part of the skull. In profile the rostrum is normal, with slightly concave dorsal outline. The postorbital processes are long and slender but do not quite meet the upward projection of the maxillary process. The relatively weak jaw is indicated by the fact that although the specimen is quite adult with somewhat worn teeth, the temporal crests do not unite to form a sagittal ridge but are separated by a space of about 5 mm. throughout their length. The anterior border of the orbit lies vertically above the front edge of  $m^2$ . The three groups of palatal ridges are as usual, 5-5-3.

The upper canines are slender and weak, about twice the height of the large  $pm^3$ . The first premolar ( $pm^2$ ) is exceedingly small, hardly piercing the gum and visible only with a lens. The large premolar ( $pm^3$ ) is of the usual shape, rather stout, with a strongly convex anterior outline and a well-marked posterior basal ledge. A similar ledge is present on the last premolar ( $pm^4$ ) but is not marked off by a notch. In crown view the cheek teeth are distinctly spaced, the two large premolars about equal in area, but the anterior molar is narrower and slightly longer than either. In the lower jaw, the middle incisors have a pear-shaped crown, as seen from above, the outer incisors a nearly circular crown the area of which is about thrice that of the inner incisors, but slightly less than that of the small first premolar ( $pm^2$ ). The postero-external basal ledges of the two large premolars are well marked. The crown area of the last molar is subequal to that of the first lower premolar.

*Measurements.*—The type in alcohol measures as follows: total length of head and body about 160 mm.; tail 0; ear 25; tibia 47; hind foot with claws 32.5; calcaneum 15; forearm 111; second metacarpal 59; third metacarpal 79; fourth metacarpal 76; fifth metacarpal 81; thumb from bend of wrist to tip of claw 43.

The skull measures: greatest length 51.6 mm.; basal length 47.1; palatal length 29.4; zygomatic width 27.5; mastoid width 18.3; width outside  $pm^3$  13; upper cheek teeth ( $c-m^2$ ) 19.2; lower cheek teeth ( $c-m_3$ ) 21.5; breadth of brain case 20; interorbital distance 8.5.

*Remarks.*—Hitherto only one fruit bat has been reported from the Maldivé Archipelago, a small insular race of the Indian *Pteropus giganteus* group which I described in 1908 as *Pteropus ariel*. The discovery of a representative of the *hypomelanus* group in the southern part of the same archipelago is thus of special interest, for this is a species mainly of the East Indian archipelago and southern Malaysia, with forms in the Nicobars and Andaman Islands, but it is absent from India and Ceylon. Further, the record not only adds this type to the tropical island groups of the middle Indian Ocean but partly bridges the gap in distribution between the eastern races and the more modified *Pteropus subniger* which, according to Andersen, represents the species in the Mascarene Islands, Réunion, and Mauritius.

***Hipposideros larvatus grandis*, subsp. nov.**

*Type*.—Adult male, skin and skull No. 10666, Indian Museum, from Akanti, upper Chindwin River, Upper Burma, 500 ft. Collected 24 June 1914, by G. C. Shortridge.

*Description*.—A large form, with longer forearm and longer leg and foot than the typical race of Java. Compared with the latter, the color above averages noticeably paler brown with more prominent whitish bases to the hairs. The general color of the type above is dull 'russet' in the terminal third of the hairs, while the basal two-thirds is contrastingly paler, whitish or faintly buffy. On the under surface the tint is near 'ochraceous-tawny', the hairs becoming dark brownish at the extreme base. Other specimens (adult but perhaps slightly younger) are duller, near Mars brown above, with the basal two-thirds of the hairs clearer whitish, and with the under parts a slightly paler tint of the same.

The skull of this northern race closely resembles that of the Javan bat, but averages very slightly larger, with noticeably larger teeth and longer tooth rows. In side view the large upper premolar has a greater bulk and its tip extends farther ventrally in relation to the canine. The last upper molar is much larger with well-developed parastyle and metastyle, quite different in appearance from its narrowly compressed condition in typical *larvatus*.

*Measurements*.—The forearm of the type measures (in the skin) 62.6 mm., which is exactly the average of nine specimens from Khasi Hills, Assam, and Prome, Burma, in which the extremes of length are 58.4—65, with most of the series over 60. In ten Javan specimens in alcohol, the average forearm measurement is 57.8 mm., with extremes from 55.8—59. The leg and foot are noticeably larger and more robust in the Burmese race, the length from top of knee to front of the claws, as naturally extended, being 35—37 mm. in the latter against 30.2 in Javan specimens, with a proportionately stouter foot.

The type measured in the flesh: head and body 72 mm.; tail 38; hind foot without claws 13; ear 24. Its skull measures: greatest length 23.5 mm.; basal length 19.2; palatal length 8.7; zygomatic width 13.0; mastoid width 11.5; width across the last molars 9.3; upper cheek teeth 9.3; lower cheek teeth 10.1. These skull measurements are not greatly different from those of Javan specimens but the tooth differences noted are fairly striking.

*Remarks*.—A series of skins and spirit specimens from Java, the type locality, of *N. larvatus* has been available for comparison with similar series from Tenasserim and Burma. Skins from southern Tenasserim (Maliwin) seem nearer the typical race, from which they are hardly distinguishable. One of the two specimens is in the red phase, and is a uniform brilliant orange-ochraceous above and below, the upper surface darkened by the burnt-umber tips of the hairs. Two skins from Muong Moun, Tonkin, are also not much larger than the Javan animal, and were by Osgood referred to the typical form. The series from Prome, Burma, and additional specimens from Khasi Hills, Assam, the upper Chindwin, Mt. Popa, and Paungyaung, North Shan States, are uniformly of larger size as appears in comparison of forearm length, hind leg and foot. The

range of the race *grandis* may then be tentatively given as Assam and Upper Burma south to Tenasserim. It should be added that the sub-specific name *grandis* had been added on the labels of some of the Upper Burma skins which evidently some previous worker (possibly the late Mr. R. C. Wroughton) had intended to describe. As no description using this name has appeared, I have adopted it here.