

Neoplatymops mattogrossensis. By Michael R. Willig and J. Knox Jones, Jr.

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Neoplatymops Peterson, 1965

Neoplatymops Peterson, 1965:3. Type species *Molossops mattogrossensis* Vieira.

CONTEXT AND CONTENT. Order Chiroptera, Family Molossidae. The genus *Neoplatymops* is monotypic; some regard it as a subgenus of *Molossops*.

Neoplatymops mattogrossensis (Vieira, 1942)

South American Flat-headed Bat

Molossops mattogrossensis Vieira, 1942:430. Type locality S. Simão, Rio Juruena, N of Mato Grosso, Brazil.

Neoplatymops mattogrossensis, Peterson, 1965:5; first use of current name combination.

CONTEXT AND CONTENT. Context same as for generic account above. No subspecies are recognized.

DIAGNOSIS. Inasmuch as the genus is monotypic, this diagnosis applies to both genus and species (Peterson, 1965). Size small for a member of the family Molossidae (Fig. 1). Forearm with small wart-like granular structures on the dorsal surface not found in any other New World molossid; gular gland on throat; dental formula $i\ 1/2, c\ 1/1, p\ 2/2, m\ 3/3$, total 30; upper incisors strongly hooked forward and separated from each other and from canines by evident spaces; two premolars above and below well developed, not crowded, P3 small, but P4, p3, and p4 large and conspicuous; skull distinctly flattened, lacking sagittal crest (Fig. 2); lacrimal ridges well developed.

GENERAL CHARACTERS. Males average significantly larger than females in most external and cranial measurements but the differences are not great (Willig, 1983, in press). Average external and cranial measurements for a series of males and females, respectively ($\pm 1\ SD$ and n in parentheses), from northeastern Brazil (Willig, 1983) are as follows: total length, 79.1 (3.12, 22), 76.8 (4.49, 26); length of tail, 25.5 (2.84, 22), 25.7 (2.50, 26); length of hindfoot, 5.3 (0.55, 22), 5.0 (0.45, 26); length of ear, 13.4 (0.58, 22), 13.1 (0.71, 26); length of forearm, 30.1 (0.90, 22), 30.2 (1.03, 26); greatest length of skull, 14.11 (0.35, 21), 13.47 (0.34, 22); condylobasal length, 13.91 (0.31, 21), 13.31 (0.25, 22); zygomatic breadth, 9.76 (0.25, 15), 9.31 (0.25, 11); postorbital constriction, 3.36 (0.10, 22), 3.29 (0.08, 25); mastoid breadth, 9.60 (0.40, 16), 9.06 (0.22, 14); breadth of braincase, 7.08 (0.28, 21), 6.81 (0.18, 22); breadth across upper molars, 6.54 (0.13, 21), 6.40 (0.15, 25); length of maxillary tooththrow, 5.57 (0.15, 21), 5.34 (0.13, 25); length of mandibular tooththrow, 5.91 (0.10, 22); 5.69 (0.13, 24). Weight (g) of this Brazilian series averaged 6.1 for 22 males and 5.4 for 26 females. Willig (in press) provided additional measurements, including those of specimens from Guyana and Venezuela. Based on univariate and multivariate statistical analyses of external and cranial characters (Willig, in press), only slight geographic variation in size among presently known populations was found. Principal component analyses and cluster analyses did not reveal natural groups or clusters of individuals representing each geographic sample.

Some cranial measurements (mm) of the holotype (male) and a female from the type locality, respectively, follow (measured by MRW): greatest length of skull, 14.5, 13.3; breadth of braincase, 7.4, 7.2; postorbital breadth, 3.6, 3.5; length of maxillary tooththrow, 5.8, 5.5; palatal breadth, —, 6.4; postpalatal length, 5.8, 6.0; palatal length, 7.3, 6.7; condylobasal length, 14.0, 13.1; rostral breadth, 2.2, 1.9; length of maxilla, 11.2, 10.5; length of mandibular tooththrow, 6.0, —.

The pelage is relatively short (about 3 mm middorsally) and

sparse. Upperparts pale brownish, the individual hairs brown distally and white basally; the white basal coloration is evident in dorsal view, resulting in the overall paleness. Ears and membranes dark brown, contrasting noticeably with dorsum; ears widely separated. Venter pale whitish to grayish, sometimes tinged slightly with brown. Hairs on hindfeet long and conspicuous, extending far beyond toes.

Additional cranial characters (Peterson, 1965) include: both pairs of lower incisors deeply bifid; hypocone suppressed on M1 and M2; M3 with well-developed third commissure; premaxillaries forming continuous palate anteriorly (no emargination); lower canines in line with cheekteeth; conspicuous antorbital foramen, opening dorsoanteriorly; pronounced mandibular depression behind root of canine and below the two premolars. Illustrations were provided by Peterson (1965).

DISTRIBUTION. The distribution of this flat-headed bat is not especially well documented. It is known to occur in five general areas from southeastern Venezuela and southwestern Guyana southward to eastern and central Brazil (Fig. 3).

FORM AND FUNCTION. *Neoplatymops* is one of the smallest described molossids (Freeman, 1981; Peterson, 1965; Willig, 1985). Its aerodynamic attributes are more like those of the Vespertilionidae than of the Molossidae (Willig, in press). Average measurements for a series of males and females, respectively, from northeast Brazil (Willig, in press) are as follows: surface area (cm²), 34.2, 32.6; wing span (cm), 21.7, 21.3; aspect ratio, 7.0, 7.0; tip index, 1.9, 1.8; wing loading (g/cm²), 0.093, 0.086. Maximum flight speeds were estimated as about 33 km/h. Crevice dwelling was suggested by Willig (in press) as a selective force that reduced morphometric variation in this molossid. Because of the strength and mechanical advantage derived from the moderately thick jaws and well-elevated condyles above the tooththrow, this flat-headed bat is capable of consuming both soft- and hard-shelled food items (Freeman, 1981).

The adaptive significance of the forearm granulations has not been determined. One of us (MRW) has attempted to remove specimens from crevices with forceps; upon contact, individuals of this species wedge their forearms against the upper surface of the granitic exfoliation. The granulations on the forearm may provide additional anchorage into the porous granitic surface, thereby reducing



FIG. 1. Live specimen of *Neoplatymops mattogrossensis* from northeastern Brazil (photograph by M. R. Willig).

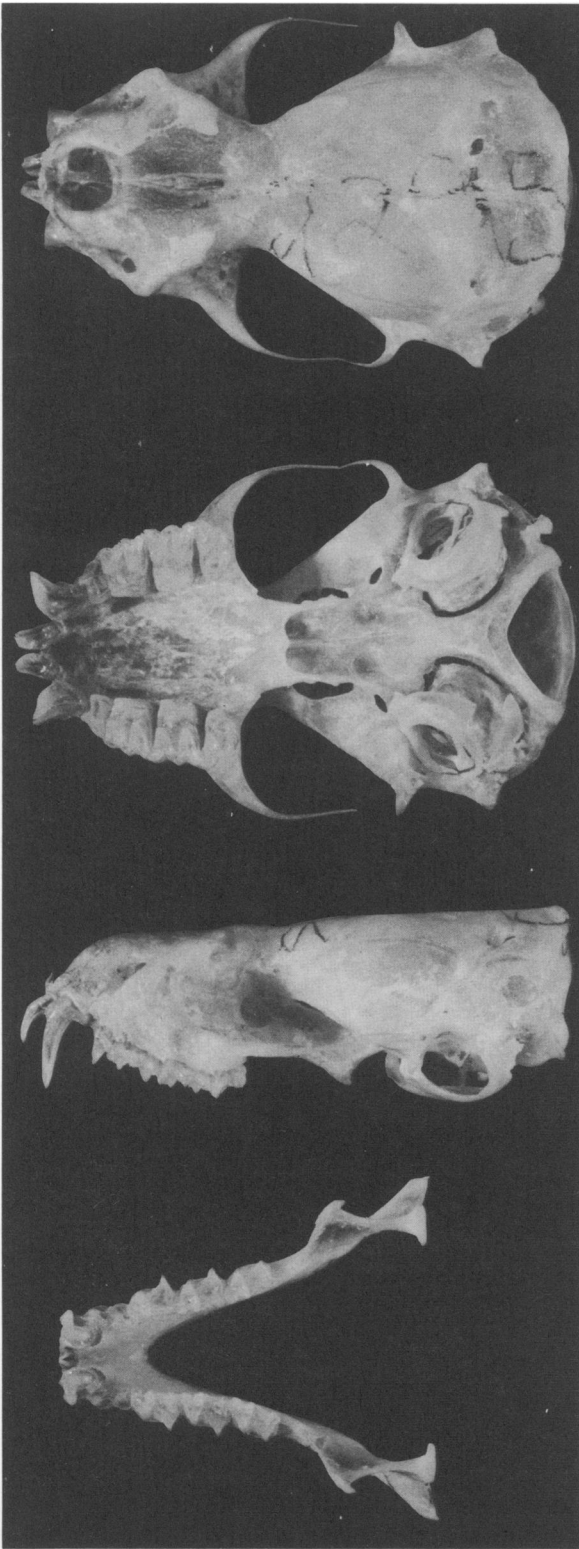


FIG. 2. Dorsal, ventral, and lateral views of cranium and dorsal view of lower jaw of *Neoplatymops mattogrossensis* (male, 2295 M. R. Willig, Carnegie Mus. Nat. Hist.). Greatest length of skull is 14.5 mm (photographs by N. Olson).

the incidence of capture by potential predators such as snakes and marsupials.

Embryonic development has not been reported for this species. However, Peterson (1965) recorded variation associated with post-partum ontogeny. The wart-like granulations of the forearm were present on even the youngest neonates from Guyana; additional

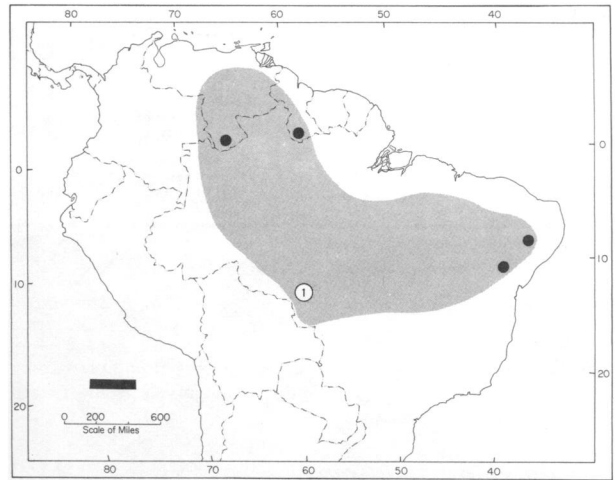


FIG. 3. Probable distribution of *Neoplatymops mattogrossensis* (modified from Koopman, 1982). Dots represent areas of certainly known occurrence (after Willig, in press); white dot (1) indicates the type locality. Solid bar above the scale of miles equals 500 km.

data from northeastern Brazil indicates that the granules develop well before parturition.

REPRODUCTION AND ONTOGENY. Isolated records of pregnant and lactating specimens from Guyana were reported by Peterson (1965). Willig (in press) noted that *Neoplatymops* was monotocous and seasonally monestrous with parturition occurring during the transition from the dry to wet seasons in the Brazilian Caatingas. Reproductive synchrony was complete.

ECOLOGY AND BEHAVIOR. This molossid is a microhabitat specialist (Willig, 1983, in press). In the Caatingas of northeastern Brazil, its local distribution is restricted to areas containing rocky outcrops where it roosts close to the ground in narrow horizontal crevices beneath granitic exfoliations. A similar roost preference has been reported in Venezuela, Guyana, and elsewhere in Brazil by Handley (1976), Peterson (1965), and Sazima and Taddei (1976), respectively. Small holometabolous insect taxa compose the diet of this species. Coleopterans (Scarabaeidae, Hydrophilidae, and Dytiscidae) and dipterans (nematocerans and Calliphoridae) were the predominant food items in the Caatingas, although some taxa in the Hemiptera, Lepidoptera, Homoptera, Hymenoptera, Diptera, Orthoptera, and Blattodea were consumed also (Willig, in press). Dietary information from other localities is unavailable. The peculiar aerodynamic characteristics of *Neoplatymops* result in low vagility for a volant mammal and increased foraging maneuverability for a molossid (Freeman, 1981; Willig, in press). As a result, this flat-headed bat occupies an atypical molossid niche.

GENETICS. The $2n$ number of an adult female *Neoplatymops* from northeast Brazil was 48 and the fundamental number was 60 (62 if the sex chromosomes are considered acrocentric; A. L. Gardner, pers. comm.). The karyotype includes one pair of large biarmed chromosomes and three pairs of medium-sized metacentrics or submetacentrics. The gross chromosomal morphology of *Neoplatymops* is similar to that of *Otomops* and *Platymops*. Karyotypic evidence does not support inclusion of this flat-headed bat in the genus *Molossops*. However, if *Neoplatymops* is considered to be a subgenus of *Molossops*, then the range of karyotypic variation within the genus ($2n = 34$ to 48; FN = 56 to 60 or 62) is unusually large for the otherwise chromosomally conservative taxa in the Molossidae (Gardner, pers. comm.).

REMARKS. Currently there is controversy as to whether *Neoplatymops* should be recognized as a distinct genus or as a subgenus of *Molossops*. Koopman (1982), for example, recognized *Neoplatymops*, but Honacki et al. (1982), following Freeman (1981), did not. Whether *Cynomops* and *Molossops* should be recognized at the generic level (subgenera fide Freeman, 1981) also is unresolved, and Ibañez (1980) recently named *Cabreramops*, based on *Molossops aequatorianus*. Until *Molossops* and its related taxa are

studied in detail, we choose to retain *Neoplatymops* as distinct at the generic level. It differs from other New World *Molossops* (sensu lato) in its flattened skull, two well-developed premolars above and below, wart-like granules on the forearm, and in other ways described by Peterson (1965), as well as karyotypically.

The generic name of the South American flat-headed bat is a combination of three Greek words, *neo* (new), *platy* (flat), and *mops* (bat). The specific name comes from Mato Grosso, the state in Brazil from which the holotype originated.

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