

**Mormopterus petrophilus.** By David S. Jacobs and M. Brock Fenton

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**Mormopterus Peters, 1865**

*Nyctinomus* Geoffroy Saint-Hillaire, 1818:114. Type species *Nyctinomus aegyptiacus*.

*Molossus* Gray, 1839:7. Type species *Molossus norfolkensis*.

*Mormopterus* Peters in Sclater, 1865:468. Type species *Nyctinomus jugularis* Peters.

*Platymops* Roberts, 1917:5. Type species *Platymops petrophilus*.

*Micronomus* Iredale and Troughton, 1934:100. Type species *Molossus norfolkensis* Gray.

*Sauromys* Peterson, 1965:12. Based on *Platymops petrophilus* Roberts.

**CONTEXT AND CONTENT.** Order Chiroptera, suborder Microchiroptera, family Molossidae. The genus *Mormopterus* contains 11 species. Classification of *Mormopterus* species from Australia is in flux because undescribed taxa may be present (Churchill 1998).

- 1 Skull extremely flattened; occurs in Africa ..... 2
- Skull not extremely flattened; mostly not in Africa ..... 3
- 2 Forearm with wartlike granulations; length of forearm 29–36 mm ..... *M. setiger*
- Forearm lacking wartlike granulations; length of forearm 38–48 mm ..... *M. petrophilus*
- 3 Known from the New World ..... 4
- Not known from the New World ..... 6
- 4 Recorded from Cuba; length of forearm 29–31 mm ..... *M. minutus*
- Recorded from southwestern South America; length of forearm 34–49 mm ..... 5
- 5 Length of forearm 34–49 mm; skull not flattened; 1 upper premolar per quadrat; basisphenoid pits present; palate not domed ..... *M. kalinowski*
- Length of forearm 33–34 mm; skull flattened; 2 upper premolars per quadrat; no basisphenoid pits; palate domed ..... *M. phrudus*
- 6 Recorded from Madagascar; some records from Africa ..... 7
- Only known from locations east of Madagascar ..... 8
- 7 Madagascar; 2 African records; ears triangular in shape; length of forearm 38–39 mm ..... *M. acetabulosus*
- Madagascar; ears rounded; length of forearm 35–37 mm ..... *M. jugularis*
- 8 Recorded from Sumatra; not known from Australia and/or New Guinea; length of forearm 32–34 mm ..... *M. doriae*
- Not known from Sumatra; occurs in Australia and/or New Guinea; length of forearm 33–40 mm ..... 9
- 9 Length of forearm ≤33 mm ..... *M. planiceps* (= *loriae*)
- Length of forearm >33 mm ..... 10
- 10 Gular gland lacking; heavy build; length of forearm 33–39 mm ..... *M. beccarii*
- Gular gland present; light build; length of forearm 36–40 mm ..... *M. norfolkensis*

**Mormopterus petrophilus (Roberts, 1917)**

Roberts' Flat-headed Bat

*Platymops petrophilus* Roberts, 1917:5. Type locality "Bleskop, near Rustenburg."

*Sauromys petrophilus* Peterson, 1965:12. Based on *Platymops petrophilus* Roberts.

*Mormopterus petrophilus* Freeman, 1981:78, figure 16. First use of current name combination.

**CONTEXT AND CONTENT.** Generic context given above. *M. petrophilus* was treated as a separate genus, *Sauromys*, by Pe-

terson (1965). Wilson and Reeder (1993) follow Freeman (1981) and do not recognize *Sauromys* as a genus, although Freeman distinguished *Sauromys* as a subgenus and thought it 1 of the 2 most derived members of *Mormopterus* along with *M. setiger*. Corbet and Hill (1991) recognized *Sauromys* as a genus, a view persistently held by Peterson (Peterson 1985; Peterson et al. 1995) and followed by Nowak (1999). Although 5 subspecies (*erongensis*, *fitzsinonsi*, *haagneri*, *petrophilus*, and *umbratus*) have been proposed based on minor variations in pelage color, morphometric data do not support these divisions and we consider *M. petrophilus* monotypic.

**DIAGNOSIS.** Lips of sympatric species of *Chaerephon*, *Mops*, and *Tadarida* are wrinkled unlike those of *M. petrophilus* (Fig. 1), which also has stiff hairs on the upper lips. Unlike *M. setiger*, males of *M. petrophilus* lack a gular gland, and their forearms lack wartlike granulations (Peterson 1965). *M. petrophilus* is 1 of 2 species of African molossids with a distinctively flattened skull lacking any sagittal crest (Fig. 2). In *M. petrophilus*, ears arise from a common point on top of head but are not connected by a flap of skin. Other species of *Mormopterus* have ears arising from separate points on the head.

**GENERAL CHARACTERISTICS.** *Mormopterus petrophilus* is a small- to medium-sized, flat-headed molossid with a light gray-brown dorsum, although pelage may be dark brown in some areas. Venter is lighter in color: throat, chest, and belly are creamy white with some lateral light-brown wash. Thoracoabdominal stripes, typical of some other African molossids, are absent. External and skull measurements that follow (ranges; in mm) are from specimens from the Transvaal taken from Rautenbach (1978) via Smithers (1983): length of forearm, 34.0–40.4; length of head and body, 86–100; length of ear, 10–15; length of tail, 26–40; condylobasal length, 16.7–178.3; zygomatic breadth, 10.3–11.1; c–m, 5.8–6.3; and length of mandible, 11.7–12.3. Roberts' flat-headed bats range in body mass from 9 to 22 g.

*Mormopterus petrophilus* has a wide and deep palatal emargination between upper incisors and a small secondary cusp on lateral side of upper incisors just below gum line (Peterson 1965). Ears are simple ovoid and subtriangular in form, with a well-developed antitragal lobe. Tragus is small. Outer aspects of 1st and 4th toes are adorned with short recurved hairs. Wings are relatively broad.

**DISTRIBUTION.** *Mormopterus petrophilus* is known from southern Africa, with records from the Cape region of South Africa,



FIG. 1. *Mormopterus petrophilus* captured at the Algeria Forestry Station in South Africa. Photograph by D. S. Jacobs.



FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Mormopterus petrophilus* from Zimbabwe (19°56'S, 32°24'E; male, Royal Ontario Museum # 65 007). Greatest length of cranium 12.65 mm. Photograph by M. B. Fenton.

north and east through Namibia, Botswana, Zimbabwe, and Mozambique (Fig. 3; Peterson 1965; Rautenbach et al. 1979; Smithers 1983). Although Meester et al. (1986) referred to a specimen from Ghana in the Smithsonian collection, a check of the collections in October 2000 (D. E. Wilson, pers. comm.) revealed that the 38 specimens in that collection were from Botswana (2), Mozambique (14), Namibia (9), and South Africa (13). No fossils are known.

**FORM AND FUNCTION.** Wing span of 4 individuals (3 females, 1 male) from the Cape region of South Africa ranged from 25.1 to 27.5 cm, and wing area was relatively low, ranging from 81.0 to 96.9 cm<sup>2</sup> (D. S. Jacobs, in litt.). Relatively high wing loading (11.6–12.7 N/m<sup>2</sup>) with moderately high aspect ratio (7.6–8.3) suggests that Roberts' flat-headed bat is a relatively fast flyer in open space. This agrees with the fact that *M. petrophilus* is most often captured over open water (Jacobs and Fenton, in press).

**ONTOGENY AND REPRODUCTION.** At Nyashato in Zimbabwe, pregnant and lactating females were taken in November (W. Cotterill, pers. comm.).

**ECOLOGY.** Roberts' flat-headed bats were caught in mist nets, often set over or near water, or were taken during the day from under slabs of exfoliated rock or in narrow crevices. Up to 4

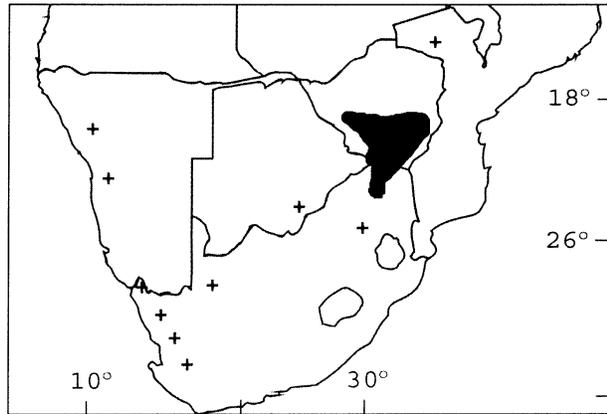


FIG. 3. Specimen records (crosses) of *Mormopterus petrophilus* and distribution in Zimbabwe and adjacent South Africa (solid area).

individuals have been found roosting together, although at least 10 individuals may use a single roost (Rautenbach 1978). When disturbed in their roosts, Roberts' flat-headed bats scramble back into the crevices. Roosting Roberts' flat-headed bats are often tightly packed together but scatter when disturbed. In Zimbabwe, Roberts' flat-headed bats roost in the same crevices as *Tadarida aegyptiaca* (Irwin and Donnelly 1962). Both species are often caught together at the Algeria Forestry Station in Cape Province, South Africa (Jacobs and Fenton, in press).

Based on skull and mandible morphology, *M. petrophilus* may feed mainly on small-sized, soft-bodied prey (Freeman 1981). However, stomach contents of 11 specimens contained both soft- and hard-bodied prey (moths and beetles—Freeman 1981). Hard-bodied prey also were present in fecal pellets. Diet of 14 specimens (71 pellets from 14 bats—D. S. Jacobs, in litt.) from the Cape region of South Africa was dominated by hard-bodied insects (43% Coleoptera, 29% Hemiptera, 18% Hymenoptera). Soft-bodied prey constituted about 10% of the diet (Lepidoptera, Diptera, and Neuroptera). In Namibia, *M. petrophilus* does not require regular access to water, presumably acquiring water from its insect prey (Roer 1971).

**BEHAVIOR.** Like other molossids, *M. petrophilus* is a low-duty cycle echolocator. An analysis of 30 calls from 8 individuals recorded at the Algeria Forestry Station in South Africa reveals the use of frequency-modulated, narrow-band calls (bandwidth ranged from 3.9 to 14.7 kHz) typically sweeping from a maximum frequency of 31.4–43.5 kHz to a minimum frequency of 26.7–30.9 kHz. Call duration ranged from 5.0 to 10.2 ms, and frequency at the heel of the call ranged from 28.0 to 37.5 kHz. The heel of the call corresponds to the frequency of maximum intensity (Taylor 1999).

**GENETICS.** In 26 specimens, the chromosomal complement ( $2n = 48$ ;  $FN = 62$ ) consists of 1 pair of large metacentric, 3 pairs of medium metacentric, 4 pairs of medium subtelocentric, and 15 pairs of medium-to-small acrocentric chromosomes (Rautenbach et al. 1993). The X chromosome is a medium-sized submetacentric, and the Y chromosome, a small acrocentric.

**CONSERVATION STATUS.** *Mormopterus petrophilus* is rare in the Cape Province of South Africa (Herselman and Norton 1985). However, *M. petrophilus* was not distinguished from *Charephion pumila* (Jacobs and Fenton, in press). *M. petrophilus* is commonly captured at some sites in the Cape Province, is not listed by the International Union for the Conservation of Nature, and is identified as lower risk by Hutson et al. (2001).

**REMARKS.** The generic name *Mormopterus* means winged goblin. The species name *petrophilus* means rock-loving, reflecting the fact that the 1st specimens were found by people looking for scorpions under rocks. Used with *Sauromys* (*sauros* meaning lizard, *mys* meaning mouse), the name *Sauromys petrophilus* means rock-loving lizard mouse. The number of upper premolars varies in *Mormopterus*, making the taxonomic value of this feature questionable (Harrison 1962).

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Associate editors of this account were ELAINE ANDERSON and SERGE LARIVIÈRE. Editor was VIRGINIA HAYSEN.

D. S. JACOBS, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF CAPE TOWN, PRIVATE BAG RONDEBOSCH 7701, CAPE TOWN, SOUTH AFRICA. M. B. FENTON, DEPARTMENT OF BIOLOGY, YORK UNIVERSITY, NORTH YORK, ONTARIO M3J 1P3, CANADA.