

Otonyctomys hattii (Rodentia: Cricetidae)

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Abstract: *Otonyctomys hattii* Anthony, 1932, is a rodent commonly called the Yucatán vesper mouse. A medium-sized, brightly colored mouse, it is the only species in the genus *Otonyctomys*. It is endemic to the Yucatan Peninsula. It seems to have arboreal habits and occurs in semideciduous tropical forest and vegetation near water. It feeds on seeds, either on the ground or in shrubs, and soft-bodied fruits. It is considered a rare species throughout all of its geographic range but evaluation of its current conservation status is warranted. DOI: 10.1644/825.1.

Key words: cricetid, endemic species, Mexico, rodent, Yucatán vesper mouse

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Otonyctomys Anthony, 1932

Otonyctomys Anthony, 1932:1. Type species *Otonyctomys hattii* Anthony, 1932, by original designation.

CONTEXT AND CONTENT. Order Rodentia, suborder Myomorpha, superfamily Muroidea, family Cricetidae, subfamily Tylomyinae. *Otonyctomys* is monotypic.

Otonyctomys hattii Anthony, 1932 Yucatán Vesper Mouse

Otonyctomys hattii Anthony, 1932:1. Type locality “Chichen Itza, Yucatan, Mexico.”

CONTEXT AND CONTENT. Context as above. *Otonyctomys hattii* is monotypic.

NOMENCLATORIAL NOTES. *Otonyctomys hattii* is called Yucatán vesper mouse in English, and *Chó'* in Mayan (Navarro et al. 1990). *Otonyctomys* is from the Greek *otos* meaning ears, *nyktos* meaning night, and *mys* meaning mouse (Alvarez-Castañeda and Alvarez 1996). The specific epithet *hattii* is a patronym for Robert T. Hatt, who collected the 1st specimen (Anthony 1932).

DIAGNOSIS

Otonyctomys hattii (Fig. 1) is almost identical in external characters to the closely related Central American vesper

mouse (*Nyctomys sumichrasti*), but its pelage is brighter russet (Anthony 1932). The most conspicuous character separating *O. hattii* from the genus *Nyctomys* is the size of auditory bulla, which is up to 3 times larger than that of *N. sumichrasti* (Anthony 1932). Overall, *O. hattii* is consistently smaller in most cranial measurements than *N. sumichrasti*, except breadth and depth of braincase, which are larger due to the effect of inflated bullae (Genoways et al. 2005). Cheek teeth and maxillary toothrow are noticeably smaller in *O. hattii* (Anthony 1932; Hall 1981); differences in toothrow size can be detected by direct observation without measurement (Genoways et al. 2005). External measurements are generally



Fig. 1.—Adult *Otonyctomys hattii*, painted from life by Fiona A. Reid in Campeche, Mexico, 7 January 1989. Copyright Fiona A. Reid.

similar, but hind foot is narrower than in *N. sumichrasti* (Anthony 1932; Hall 1981).

GENERAL CHARACTERS

Otonyctomys hatti is a medium-sized, brightly colored mouse. Ears are of medium size, well covered with hair at the base but otherwise mostly naked (Anthony 1932). Pelage of upperparts is nearly uniform bright russet to hazel, with the darkest tone on the back; sides are tawny to ochraceous tawny; individual hairs of upperparts are blackish slate at base and lighter apically; pelage of venter is white or creamy from base to tip of hairs; dark facial spots present anterior to eyes and at the base of whiskers; upper side of feet whitish washed with buff or tawny tones (Anthony 1932; Hall 1981; Peterson 1966). The tail is well furred with individual hairs that increase in length from base to tip of tail; pelage of tail is bone-brown both above and below (Anthony 1932). There are 2 pairs of inguinal mammae (Anthony 1932).

No sexual dimorphism is apparent from available specimens. External measurements (means, ranges in parentheses, in mm or g) of 9–14 adult individuals of both sexes were: total length, 201.9 (163–231); length of body and head, 100.6 (90–116); length of tail, 102.6 (60–127); length of hind foot, 21.3 (18–23); length of ear, 15.0 (13–20); and body mass, 29.0 (23–36—Anthony 1932; Aranda et al. 1997; Genoways et al. 2005; Hernández-Huerta et al. 2000; Jones et al. 1974; Peterson 1966; Rick 1965; Vargas-Contreras et al. 2004). External measurements (in mm or g) of 3 juveniles from Guatemala and Quintana Roo were: total length, 157, 130, 160; length of body and head, 72, 65, 75; length of tail, 85, 65, 85; length of hind foot, 20, 18, 10; length of ear, 11, 10, 14; and body mass, 13, 5.5, 10 (Aranda et al. 1997; Peterson 1966; Rick 1965).

Rostrum is relatively short; auditory bullae are disproportionately large and occupy most of the basicranial region (Fig. 2); zygomatic arch is compressed rather than flaring; anterior margin of zygomatic plate approximately perpendicular to palatal plane; mandible is delicate with a low coronoid process and a weak ascending ramus; cheek teeth are noticeably small (Anthony 1932; Hall 1981). Skull measurements (means, ranges in parentheses, in mm) of 3–9 adult specimens were: greatest length of skull, 28.3 (26.8–29.5); condylobasal length, 26.5 (24.4–28.5); length of nasals, 9.0 (8.4–9.3); zygomatic breadth, 15.1 (14.4–16.2); least interorbital breadth, 5.2 (5.0–5.5); breadth of braincase, 13.7 (13.1–14.3); depth of braincase, 11.7 (11.5–12.0); length of rostrum, 9.3 (8.8–9.8); breadth of rostrum, 5.0 (4.8–5.2); mastoid breadth, 13.7 (13.0–14.5); length of palatal bridge, 4.3 (3.9–4.6); length of upper toothrow, 4.2 (3.8–4.4); length of lower toothrow, 4.2 (4.0–4.4); length of incisive foramen, 4.6 (4.4–5.1); length of auditory bulla, 8.5 (8.0–9.5); and breadth of auditory bulla, 6.9 (6.6–7.9—Anthony 1932; Aranda et al. 1997; Genoways et al. 2005; Hernández-

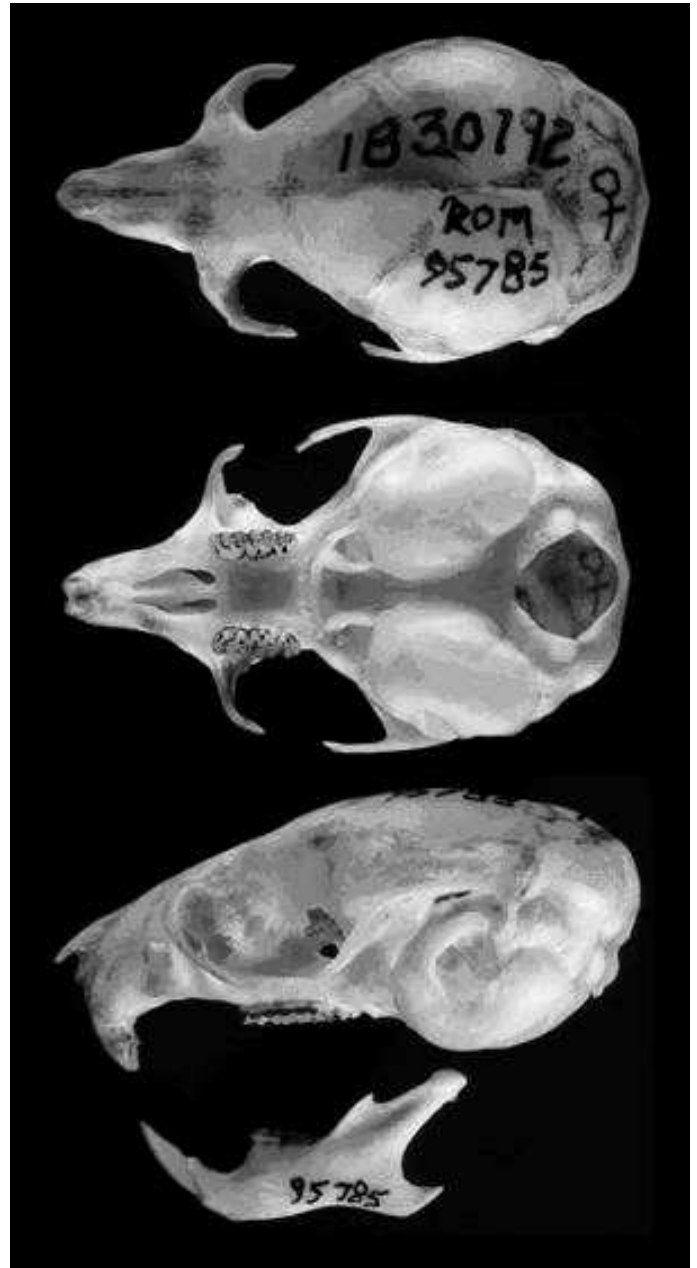


Fig. 2.—Dorsal, ventral, and lateral views of cranium and lateral view of mandible of a subadult female *Otonyctomys hatti* (IBUNAM [Instituto de Biología, Universidad Nacional Autónoma de México] 30792, formerly ROM 95785). Greatest length of skull is 26.2 mm. Photograph by R. List.

Huerta et al. 2000; Jones et al. 1974; Peterson 1966; Rick 1965).

DISTRIBUTION

Otonyctomys hatti is endemic to the Yucatan Peninsula (Fig. 3). The range of *O. hatti* includes northeastern Guatemala, central and northern Belize, and most of the

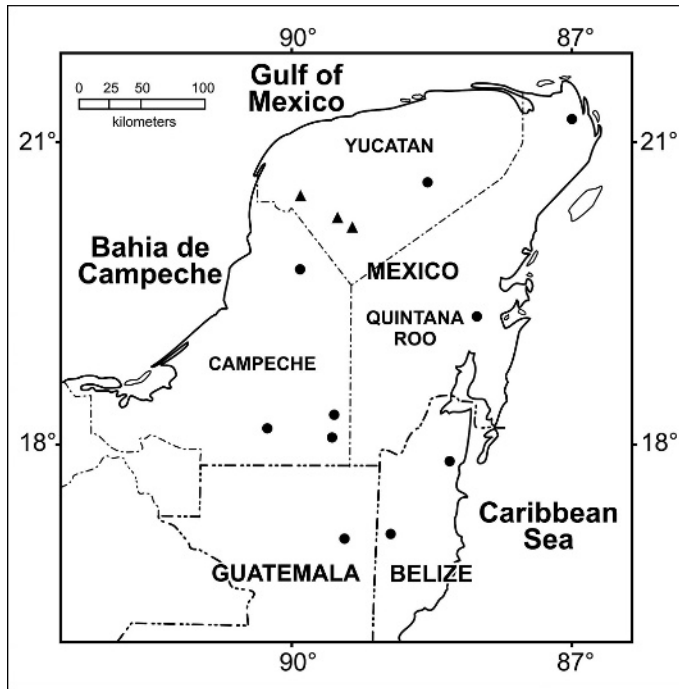


Fig. 3.—Geographic distribution of *Otonyctomys hatti* in the Yucatan Peninsula. Localities for Recent specimens are indicated by solid circles (●) and fossil material is indicated by solid triangles (▲). Modified from Genoways et al. 2005.

Mexican states of Campeche, Yucatan, and Quintana Roo (Genoways et al. 2005; Hall 1981). *O. hatti* mouse has been recorded at only 10 localities: Chichén-Itzá, Yucatan; Calakmul, Conhuás, Escárcega region, and Dzibalchén, Campeche; Rancho Las Palmas and Reserva Ecológica El Edén, Quintana Roo; Cayo District and Rockstone Pond, Belize; and Tikal, Guatemala (Anthony 1932; Aranda et al. 1997; Genoways et al. 2005; Hernández-Huerta et al. 2000; Jones et al. 1974; Laurie 1953; Peterson 1966; Rick 1965; Vargas-Contreras et al. 2004). Elevational range of known localities is sea level to 250 m.

FOSSIL RECORD

Remains of *Otonyctomys hatti* are from Pleistocene deposits in caves Lara, Has, Loltún, Coyok, Chacaljas, and Spukil in Yucatan, Mexico. The largest number of remains correspond to cave Spukil, where 18 mandibles, 2 upper tooththrows, and other fragments were recovered (Hatt et al. 1953).

FORM AND FUNCTION

Pelage of juvenile individuals is duller in color and lacks the glossiness of the adults (Rick 1965). The skull of *Otonyctomys hatti* is characterized by the greatly inflated

auditory bullae (Genoways et al. 2005; Peterson 1966). Dental formula is $i\ 1/1, c\ 0/0, p\ 0/0, m\ 3/3$, total 16.

ONTOGENY AND REPRODUCTION

Individuals of *Otonyctomys hatti* may be separated into 3 age classes (juvenile, subadult, and adult) based on tooth wear, cranial measurements, and body measurements. Breeding may occur in 2 peaks during summer and winter. At Chichén-Itzá, females with enlarged uteri were captured in October and July (Hatt 1938; Jones et al. 1974); a lactating female was present in February in Quintana Roo (Aranda et al. 1997).

ECOLOGY AND BEHAVIOR

Otonyctomys hatti occurs in mature semideciduous tropical forests that are relatively open (Aranda et al. 1997; Genoways et al. 2005; Hernández-Huerta et al. 2000; Vargas-Contreras et al. 2004), and vegetation near cenotes (water-filled sinkholes—Jones et al. 1974). In Belize, vesper mice were restricted to the broad-leaved forests of the northern plains and watersheds of rivers (McCarthy 1998).

Otonyctomys hatti seems to have strongly arboreal habits. It has been trapped on dead logs (Genoways et al. 2005), in trees (Hernández-Huerta et al. 2000; Jones et al. 1974), on lianas (Peterson 1966), and from the top of a coconut palm (Peterson 1966), usually at 1–2 m from the ground. In Reserva de la Biofera Ria Lagartos, Yucatan, 1 individual was observed in June 2005 using an abandoned nest of a woodpecker in a dead tree at 1.8 m from the ground (J. Chablé, pers. comm.).

Otonyctomys hatti also is found in human-made structures. Two individuals were trapped between the thatch and wall of a guest house at Chichén-Itzá (Anthony 1932); 1 was taken on a rafter under the roof of a house in Campeche (Jones et al. 1974); and 1 in the main station building La Sabana of Reserva Ecológica El Edén, Quintana Roo (Aranda et al. 1997). The individuals from Tikal were probably collected from the thatched wooden houses in the camp (Rick 1965). In June 2002, 2 individuals were observed on a rafter under the roof of a house at cenote Lucero (16 km road Cancun–Puerto Morelos, Quintana Roo—J. Chablé, pers. comm.).

Otonyctomys hatti feeds on seeds on the ground or in shrubs (McCarthy 1993) and probably also on soft-bodied fruits (Genoways et al. 2005). *O. hatti* has been caught in the same trap lines with other species of rodents including *Heteromys gaumeri*, *Oryzomys melanotis*, *Ototylomys phyllotis*, and *Peromyscus yucatanicus* (Genoways et al. 2005; Hatt 1938). Competition between *O. hatti* and *N. sumichrasti* might occur in a small area of Belize considering the similar size of these 2 highly arboreal mice and their reliance upon fruit in

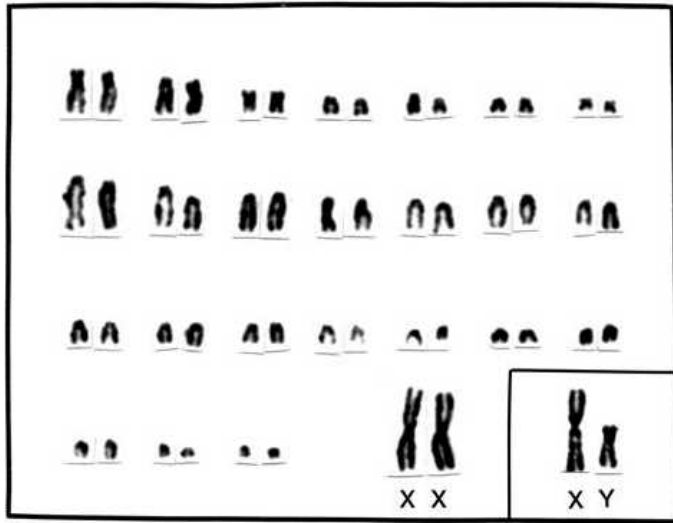


Fig. 4.—Karyotype of a female *Otonyctomys hatti* collected in Campeche, Mexico (from Genoways et al. 2005; republished with permission of the authors).

their diet. This may explain the lack of geographic overlap in most of their distributional ranges (Genoways et al. 2005).

Bone remains of *O. hatti* have been found in owl pellets (Hatt et al. 1953). The ectoparasitic chigger *Eutrombicula alfreddugesi* (Acarina, Trombiculidae) was found on a female *O. hatti* taken at Chichén-Itzá (Loomis 1969).

Otonyctomys hatti is usually trapped in Sherman live traps with banana as bait (Genoways et al. 2005; Hernández-Huerta et al. 2000; Jones et al. 1974; Peterson 1966). A female was accidentally captured in a mist net set in Campeche, Mexico (Vargas-Contreras et al. 2004). An adult male was held in captivity for nearly 2 months (Genoways et al. 2005). In captivity, *O. hatti* is nocturnal, extremely shy, and prefers seeds to fruit (Reid 1997).

GENETICS

The diploid number ($2n$) for *Otonyctomys hatti* is 50 and fundamental number (FN) is 62 (Genoways et al. 2005; Fig. 4). The karyotype comprises 7 pairs of large to small metacentric to submetacentric chromosomes and a graded series of 17 pairs of large to small acrocentric elements. The X is metacentric and is the largest chromosome in the complement. The Y is large and submetacentric (Genoways et al. 2005).

CONSERVATION

Otonyctomys hatti is considered a rare species throughout all of its geographic range (Genoways et al. 2005). There are only 18 specimens known to date. The Mexican list of endangered species (NOM-059-ECOL-2001) considers *O. hatti* as a threatened species (Secretaría de Medio Ambiente

y Recursos Naturales 2002). Although this species might not be under risk of extinction, evaluation of its current conservation status is warranted (Juárez 2005).

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