

Reithrodontomys creper. By Marianne J. Hopp and Duke S. Rogers

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Reithrodontomys creper Bangs, 1902

Chiriqui Harvest Mouse

Reithrodontomys creper Bangs, 1902:39. Type locality "Volcan de Chiriqui, 11,000 feet," Chiriqui, Panama.

CONTEXT AND CONTENT. Order Rodentia, Suborder Sciuromorphi, Superfamily Muroidea, Family Muridae, Subfamily Sigmodontinae (Carleton, 1984; Musser and Carleton, 1993), genus *Reithrodontomys*. The genus *Reithrodontomys* includes 18 extant species divided into two subgenera (Hall, 1981; Hooper, 1952). According to Hooper (1952) *R. creper* is monotypic and is a member of the *R. tenuirostris* group (together with *R. microdon*, *R. rodriguezii*, and *R. tenuirostris*) of the subgenus *Aporodon* (Hall, 1981).

DIANOSIS. Members of the subgenus *Aporodon* generally are larger in external measurements and in size of the skull compared to species in the subgenus *Reithrodontomys*. Dorsal pelage coloration among species of *Aporodon* is darker and more-reddish compared to species in the subgenus *Reithrodontomys*. In comparison to the subgenus *Reithrodontomys*, the toes of the hind feet of species of *Aporodon* are longer and the digital pads are larger, relative to the length of foot (Hooper, 1952). A comparison of zygomatic musculature demonstrates that the internal pterygoids in the subgenus *Aporodon* (*R. mexicanus*) are smaller and the temporal muscles are larger than in *R. megalotis*, a representative of the subgenus *Reithrodontomys* (Rinker and Hooper, 1950). The braincase is more elongate and inflated in species of *Aporodon*, whereas the zygomatic plate is narrower and the mesopterygoid fossa is broader in comparison to species in the subgenus *Reithrodontomys*. The molar pattern is more complex in the subgenus *Aporodon*, with the cusps, particularly in the upper molars, almost opposite in position. The third upper and lower molars are approximately three-fourths the size of the second molar, but are otherwise identical (Hooper, 1952). In the subgenus *Reithrodontomys*, the molar pattern is less complex with the cusps usually staggered, the third upper and lower molars are approximately one-half the size of the second molars, and the third molars possess a distinctive, simpler, cusp pattern relative to the first and second molars (Hooper, 1952). In addition, members of the subgenus *Aporodon* possess ≥ 37 caudal vertebrae and discoglandular gastric epithelium, whereas species placed in the subgenus *Reithrodontomys* have ≤ 36 caudal vertebrae and possess "intermediate grade" gastric epithelium (Carleton, 1980).

The species assigned to the *Reithrodontomys tenuirostris* group tend to inhabit cool, moist forests on high mountains. This group can be distinguished from other taxa in the subgenus *Aporodon* by possession of long, narrow rostra, narrow frontals, and large, rounded braincases (Hooper, 1952). *Reithrodontomys creper* is the largest species in the genus. The only species that approaches *R. creper* in size is *R. tenuirostris*, known only from several localities in Guatemala and México (Hall, 1981). Where sympatric with other species in the subgenus *Aporodon* (*R. rodriguezii* and *R. mexicanus*), *R. creper* can be distinguished easily by external characteristics (Hooper, 1952). In *R. creper*, length of hind foot ranges from 22 to 25 mm; whereas in *R. rodriguezii* and *R. mexicanus* length of hind foot ranges from 20 to 21 mm and 18 to 21 mm, respectively. In addition, there is no overlap in total length among individuals of *R. creper* compared with *R. rodriguezii* and *R. mexicanus* (208-238 mm compared with 193-204 mm and 164-203 mm, respectively).

GENERAL CHARACTERS. *Reithrodontomys creper* is the largest species in its genus (Fig. 1). Bangs (1902:39) described it as: "Belonging to a peculiar group of large-sized species with curious bird-like skulls,—very long slender rostrum and large round

brain case. Pelage exceedingly long, dense, and silky; colors all very dark; hind foot very large; tail, long."

"Upper parts, middle of back, bistre, shading on sides to raw umber; face rather more dusky, especially about eyes and at base of whiskers; under parts dark cinnamon, without marked line of demarcation, but shading gradually into color of sides; toes and fingers, whitish; upper surface of feet and hands, brownish; ears, dusky; tail, dusky all round for two thirds of its length, white all around for the terminal third" (Bangs, 1902:39).

The tail color generally is uniformly fuscous or proximally blackish and paler terminally. In a few specimens the tail was paler ventrally than dorsally. The subadult pelage of Volcan de Chiriqui specimens collected in July tends to be similar to the adult, but dorsally more blackish and with a more-defined dorsal stripe. The juvenile pelage of specimens collected in July at Volcan de Chiriqui is darker dorsally than the subadult pelage. The pelage on the ventral side, feet and tail resembles the adult pelage (Hooper, 1952).

The skull of *R. creper* is larger in all dimensions than *R. tenuirostris* (Fig. 2). The brain case is proportionally similar in breadth and depth and the rostrum is heavier (nasals are distally expanded) and longer. The interorbital frontals are broad with the interorbital constriction consisting of 44-47% of the cranial depth (Hooper, 1952).

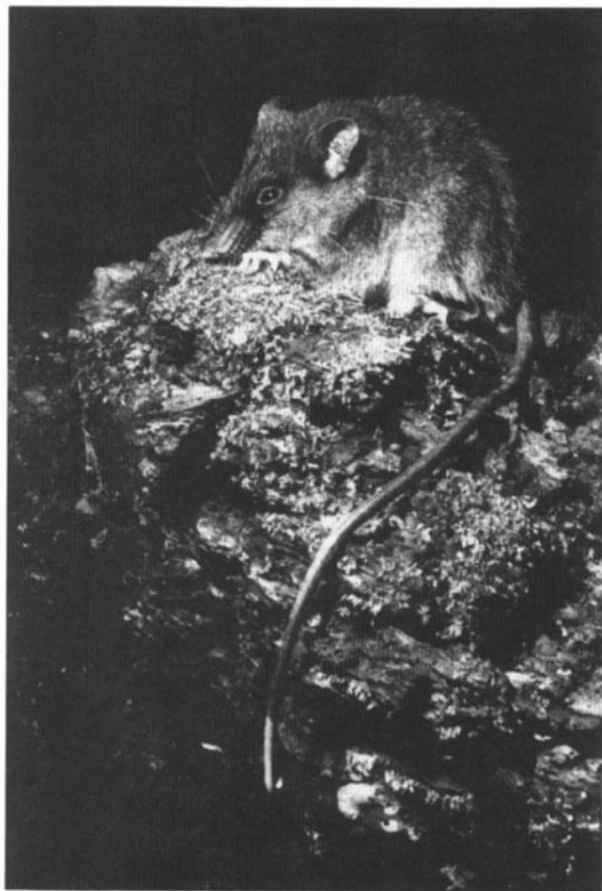


FIG. 1. *Reithrodontomys creper* from La Selva-Braulio Carrillo Complex, Costa Rica. Photograph courtesy of Barbara Clauson and Robert Timm.

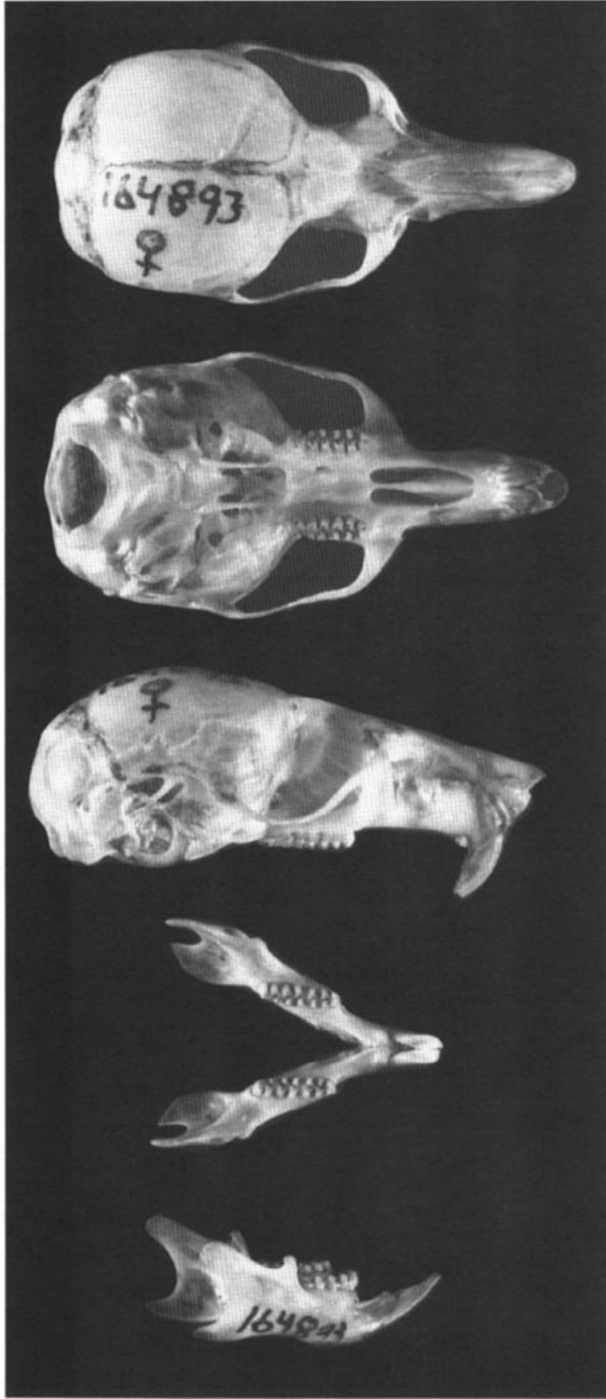


FIG. 2. Dorsal, ventral, and lateral views of the cranium, and ventral and lateral views of the mandibles of *Reithrodontomys creper* from 2.2 km E (by road) from La Trinidad de Dota, San José, Costa Rica (adult female, Museum of Vertebrate Zoology, 164893). Greatest length of skull is 25.6 mm.

The mean and range (in parentheses) of external and cranial measurements (in mm) of 31 specimens described by Hooper (1952) and collected at Volcan de Chiriqui, Panama are: total length, 223 (208–238); length of tail vertebrae, 133 (119–145); hind foot, 24 (22–25); length of ear, from notch, 16 (13–17); length of skull, 26.4 (25.3–27.6); zygomatic breadth, 13.3 (12.5–14.1); breadth of brain case, 12.1 (11.7–12.6); depth of cranium, 9.7 (9.1–9.9); interorbital breadth, 4.4 (4.2–4.6); breadth of rostrum, 4.7 (4.3–5.2); length of rostrum, 9.9 (9.1–10.5); length of palate, 4.2 (3.9–4.6); length of molar row, 4.3 (4.0–4.5); length of incisive foramen,

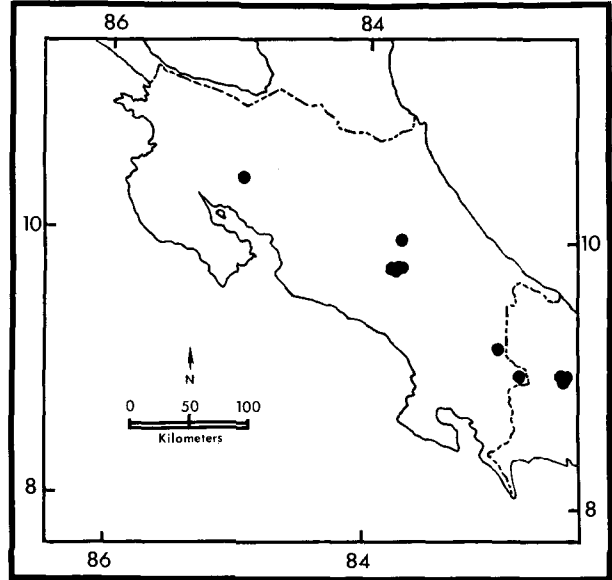


FIG. 3. Localities at which *Reithrodontomys creper* has been collected in Costa Rica and western Panama.

5.4 (5.0–5.8); breadth of zygomatic plate, 1.7 (1.5–2.0); breadth of mesopterygoid fossa, 1.9 (1.7–2.1).

DISTRIBUTION. In addition to the type locality, *R. creper* has been collected elsewhere in Panama and in Costa Rica (Fig. 3). Costa Rican localities include: Cartago Province: Cerro de la Muerta, 3,350 m; N side summit, Pan Am Hwy, Cerro de la Muerta, 3,100 m; 4 km NE Copey, 2,590 m; 2 km NNW Dos Amigos, 2,800 m; El Volcan de Irazu, 2,865 m; 1.7 km E Ojo de Agua. Limon Province: Rio Coton, 2,440 m; Rio Teribe, Valle el Silencio. Puntarenas Province: Altos de Roble, S Fork Rio Las Vueltas, 1,450 m; 1.2 mi N of Angel Falls, 1,300 m; northwest slope of Volcan Irazu (above road to Cascajal); La Ventana, Reserva Bosque Nuboso Monteverde; 5 km E of Vara Blanca, 2,050 m (Timm et al., 1989); Monteverde. San Jose Province: 2.2 km E (by road) La Trinidad de Dota, 2,600 m (Rogers and Rogers, 1992); San Gerardo de Dota, 2,550 m.

In Panama, *R. creper* has been collected at the following localities corresponding to the "Upper Tropical Zone" described by Goldman (1920:38): Bocas del Toro Province: Boquete, NE, near Rio Cylindro, 2,380 m; El Volcan, 17.5 km NNW, NE of Cerro Pando, 2,180 m. Chiriqui Province: Casita Alta, 2,285 m; Cerro Baru, 3,200 m (Barrera, 1966); Cerro Bollo, 1,800–1,856 m (Timm and Ashe, 1987); Cerro Punta, 2,075–2,375 m (Handley, 1966); El Baru, 2,345 m; Escopeta Camp, 3.5 km E, Cerro Bollo. Other locations include: Cilindro; Copeta, 3,050 m; Hortugal; El Hato; Volcan Baru Crater, 3,200 m; crater of El Volcan, 3,350 m; Potrero; and S slope El Volcan, 3,100–3,350 m (Hooper, 1952). There is no information on fossil record or form and function for *R. creper*.

ONTOGENY AND REPRODUCTION. Little data exist on the reproductive behavior of *R. creper*. One specimen collected in Panama in September contained two embryos and a second lactating specimen was trapped there in November (Hooper, 1952). Two adult females collected in April from the La Selva-Braulio Carrillo complex, Costa Rica, both had two embryos in the right uterine horn and one in the left. Crown-rump lengths of embryos from the two females were 4 mm and 5 mm, respectively. The testes of three adult males measured 19 by 10 mm, 19 by 9 mm, and 15 by 9 mm, respectively (Timm et al., 1989).

ECOLOGY. The Chiriqui harvest mouse occurs in moist temperate forests and their adjoining grasslands (Hooper, 1952), and has been collected "in open grassland at the edge of a rain forest" (Goodwin, 1946:386). According to Timm et al. (1989), *R. creper* prefers "pristine" forest, but specimens also were collected in disturbed habitats such as pasture and scrub. Other species collected in association with *R. creper* include *Heteromys oresterus*, *Mustela*

frenata, *Oryzomys albicularis*, *Peromyscus nudipes*, *R. sumachrastii*, *Scotinomys teguina*, and *S. xeramplinus* (Rogers and Rogers, 1992).

Amblyopinus tiptoni (Barrera, 1966), a staphylinid beetle, was associated with *R. creper* collected in Costa Rica (Ashe and Timm, 1987; Vaughan, 1982) and Panama (Barrera, 1966; Timm and Ashe, 1987). Earlier reports by Barrera (1966) and Zikan (1939) intimated that *Amblyopinus* were obligate ectoparasites. However, Ashe and Timm (1987:436) document that *A. tiptoni* uses its "host" *R. creper* "primarily as a vehicle for tracking their prey." According to Ashe and Timm (1987), *A. tiptoni* feeds on arthropods found in the series of nests utilized by each harvest mouse. There is no information on behavior of *R. creper*.

GENETICS. The diploid karyotype consists of 52 acrocentric chromosomes (Carleton and Myers, 1979; Hood et al., 1984). *R. creper* possesses a karyotype identical to other species (*R. gracilis*, some *R. mexicanus*, and *R. tenuirostris*) in the subgenus *Aporodon* (Carleton and Myers, 1979; Hood et al., 1984; Rogers et al., 1983). Based on G- and C-banded karyotypes, Hood et al. (1984) determined that heterochromatin was restricted to the "centromeric regions" and G-band patterns were the same as those found in *R. mexicanus*. Except for an additional small chromosome pair, *R. creper* is chromosomally identical to *R. fulvescens* (Hood et al., 1984). Most authors agree that *R. creper* (along with other species in the subgenus *Aporodon*) possesses a karyotype that represents an ancestral condition compared to karyotypes of species in the subgenus *Reithrodontomys* (Hood et al., 1984; Robbins and Baker, 1980).

Nelson et al. (1984) examined a total of 30 presumptive genetic loci from a single population of *R. creper* represented by two individuals. Of the 30 loci examined, diaphorase and purine nucleoside phosphorylase were variable (two alleles detected at each variable locus) and the remaining 28 loci were monomorphic.

REMARKS. Hooper (1952) believed the subgenus *Aporodon* to be more highly derived than members of the subgenus *Reithrodontomys* because species of *Aporodon* are larger, have longer tails, larger braincases and longer rostra, and have more complex molar teeth, as well as scansorial or arboreal habits. He viewed the smaller size, simpler molars, and the terrestrial habitats of the species in *Reithrodontomys* as a more-ancestral condition. Hooper (1952) hypothesized that the subgenus *Aporodon* originated in the highlands of Central America with the *tenuirostris* group most likely evolving in present-day Costa Rica. Hooper (1952) ranked the members of the *tenuirostris* group in order of increasing specialization as follows: *R. microdon*, *R. tenuirostris*, *R. rodriguezii*, and *R. creper*.

Reithrodontomys combines three Greek terms to derive "groove-toothed-mouse" (Webster and Jones, 1982). The specific epithet *creper* means dark or obscure. The term stems from the Latin word *crepusculum*, relating to twilight or dusk (Brown, 1956).

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