

*Irenomys tarsalis*. By Douglas A. Kelt

Published 15 November 1993 by The American Society of Mammalogists

*Irenomys* Thomas, 1919

*Irenomys* Thomas, 1919:200. Type species *Reithrodon longicaudatus* Philippi, 1900:63.

**CONTEXT AND CONTENT.** Order Rodentia, Superfamily Muroidea, Family Muridae, Subfamily Sigmodontinae, Tribe Phyllotini. *Irenomys* is monotypic.

*Irenomys tarsalis* (Philippi, 1900)

Chilean Tree Mouse

*Mus tarsalis* Philippi, 1900:10. Type locality "fundo San Juan," near La Union, Valdivia Province, X Region, Chile (Osgood, 1943: 219).

*Reithrodon longicaudatus* Philippi, 1900:64. Type locality "Melinca," Guaitecas Islands, 44°S, Chiloé, Chile.

**CONTEXT AND CONTENT.** Context as in the generic account above. Two subspecies of *I. tarsalis* are recognized (Mann, 1978; Osgood, 1943):

*I. t. longicaudatus* (Philippi, 1900:64), see above.

*I. t. tarsalis* (Philippi, 1900:10), see above.

**DIAGNOSIS.** *Irenomys tarsalis* is readily recognized within its known range as a large mouse (Fig. 1) with a tail much longer than the head and body. The eyes are large and the pelage is thick and soft. The braincase is long and the interparietal is large (Fig. 2). Most notably the combination of deep grooves on the anterior surface of the upper incisors, and the prismatic and deeply dissected molar teeth, are generically diagnostic (Hershkovitz, 1962). Hershkovitz (1962:94-95) described the molar lamination of *Irenomys* as "partial transverse lamination" to distinguish these from the offset prisms of many other taxa, such as the microtine rodents.

**GENERAL CHARACTERS.** The pelage of *I. tarsalis* is thick and soft. The dorsum is grayish cinnamon rufous with fine dusky lines (Osgood, 1943). The ears are brownish black, occasionally with an indistinct whitish spot below them. The fore and hind feet are whitish, with white toes. The tail is blackish brown, sometimes paler on the ventral surface for a short distance proximally, and is well haired with a distinctly penciled tip. The ventrum is heavily washed with pinkish cinnamon buff not fully covering plumbeous under color (Osgood, 1943).

Female Chilean tree mice may weigh more than males in Argentina ( $n = 11$  males, 13 females—Pearson, 1983), although Chilean specimens ( $n = 17$  males, 20 females) show no such pattern. No other dimorphisms are apparent (Pearson, 1983). Means and ranges of external measurements (in mm) of 37 adults from Chile are: total length, 280 (270-326); length of tail, 165 (162-196); length of hind foot, 30 (28-32); length of ear, 22 (20-25). Adult body mass of 36 Chilean specimens was 42 g (range, 40-59 g), similar to weights in Argentina (Pearson, 1983) and elsewhere in Chile (Greer, 1965). Means and ranges of selected cranial and mandibular measurements (in mm) are: greatest length of skull, 30.0 (27.7-31.1,  $n = 12$ ); basal length, 26.7 (23.8-28.25;  $n = 12$ ); length of maxillary diastema, 6.8 (5.9-7.3;  $n = 12$ ), length of maxillary toothrow, 5.6 (5.4-6.1;  $n = 12$ ); length of palate, 12.2 (11.2-13.0;  $n = 12$ ); breadth of rostrum, 4.1 (3.8-4.5;  $n = 12$ ); breadth of braincase, 13.2 (12.8-13.5;  $n = 11$ ); zygomatic breadth, 14.9 (13.8-15.6;  $n = 11$ ); interorbital breadth, 3.7 (3.5-3.8;  $n = 12$ ); length of mandibular diastema, 3.0 (2.5-3.3;  $n = 12$ ); length of mandibular toothrow, 5.6 (5.4-5.9;  $n = 12$ ); length of mandible, 15.5 (14.1-16.3;  $n = 12$ ).

**DISTRIBUTION.** The Chilean tree mouse is found in forested

habitat in Chile from Chillán (Ñuble Province, VII Region) to at least Puerto Ibáñez (General Carrera Province, XI Region), including the Guaitecas Islands and Chiloé Island, and in Argentina from Neuquen Province south to Chubut Province (Fig. 3; Olrog and Lucero, 1980; Osgood, 1943; Reise and Venegas, 1987). *Irenomys* probably occurs south to Magallanes (Mann, 1978), but no specimens are known south of Chile's XI Region (General Carrera Province, Reise and Venegas, 1987). The borders given in Fig. 3 are approximate. The eastern limits are determined by the distribution of suitable forest, whereas northern and southern limits are less well defined. This species may have ranged farther north in the central valley of Chile in historic times, but conversion of forest to ranch and farmland has excluded this species except for patches of forest habitat. The distribution in the coastal range of Chile is very poorly documented, and this portion of Fig. 3 should be considered tentative. No fossils of *I. tarsalis* are known.

**ECOLOGY.** *Irenomys tarsalis* breeds in spring, although this may be prolonged into late summer (Pearson, 1983). In Argentina, specimens captured in October and mid-November were in breeding condition (testes enlarged and descended), whereas specimens captured in autumn were not (Pearson, 1983). In Chile, males have been collected with descended and enlarged testes in February, March, May, and June. Females in Argentina have been collected in breeding condition in October and mid-November (Pearson, 1983).



FIG. 1. External appearance of *Irenomys tarsalis*. Note the large eyes, soft pelage, and long tail. Photo by P. L. Meserve.

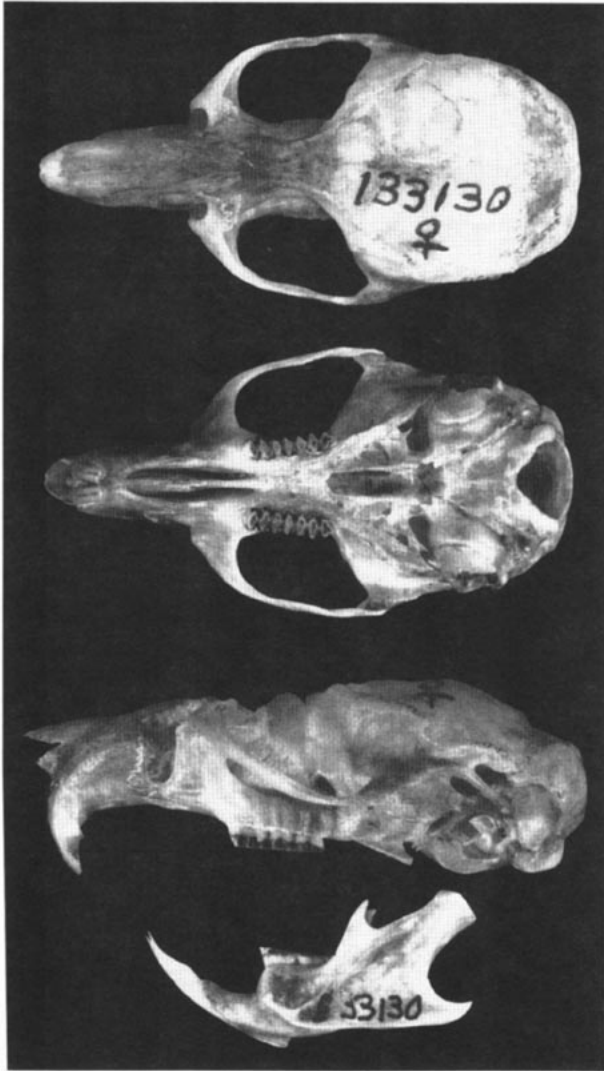


FIG. 2. Dorsal, ventral, and lateral views of the cranium, and a lateral view of the mandible of an adult female *Irenomys t. tarsalis* (Field Museum of Natural History 133130) from Maicolpue, 65 km W Osorno. Note the prismatic molars and grooved incisors. Greatest length of the skull is 30.66 mm.

In southern Chile, females with embryos have been collected in February, March, and June, although at the northern extent of their range females showed no sign of pregnancy in December and March (Greer, 1965). Half-grown young have been captured in April (Pearson, 1983), indicating that they were born in late summer. Litter size, as indicated by number of embryos observed in captured specimens, ranges from three to six (Pearson, 1983); two specimens from Argentina had three and four embryos (Pearson, 1983), whereas four specimens from Chile had five, five, six, and six embryos. Two other Chilean animals had three and six placental scars, respectively. Embryos in females caught in February and March had crown-rump lengths of 9 and 5 mm, respectively, and those found in a female caught in June were <1 mm long. One female was captured with five embryos but six follicles, indicating that some embryos may be resorbed.

This species generally is restricted to forested areas, although it may reach the edge of the forest-steppe interface in Argentina and southern Chile (Kelt, 1989; Pearson, 1983). *Irenomys* appears to associate with thick stands of bamboo (Greer, 1965; Pearson, 1983) or distinctly shrubby habitats (Patterson et al., 1990), although it also is found in forests lacking dense bamboo (Meserve et al., 1991a). It also has been collected in precordilleran-steppe habitat with scattered ciprés trees (*Austrocedrus chilensis*) and no forest or bamboo within several kilometers (O. P. Pearson, in litt.). The Chilean tree

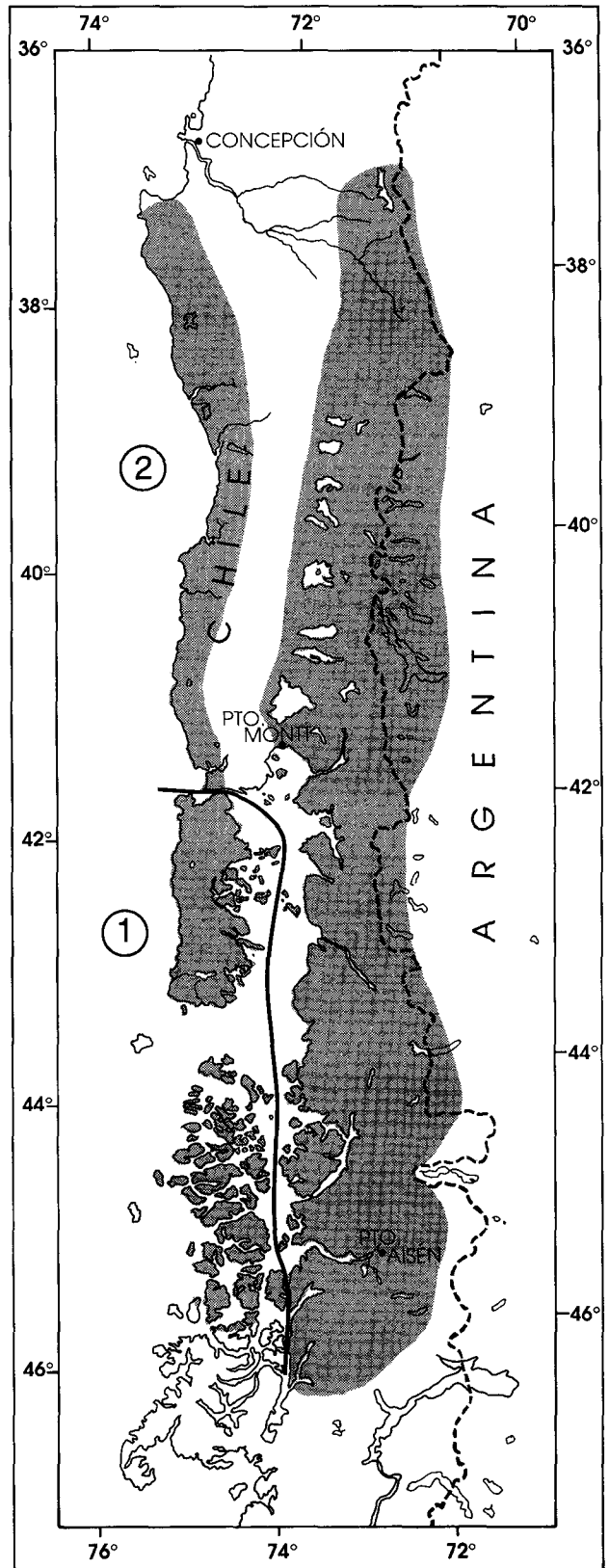


FIG. 3. Distribution of *Irenomys tarsalis*. The southern limit of this species is incompletely known, and may lie somewhat farther than indicated here. The eastern border generally is defined by the eastern extent of the southern beech forest. Finally, the absence in Chile's southern-central valley is due to habitat restrictions. 1, *I. t. longicaudatus*; 2, *I. t. tarsalis*.

mouse appears restricted to low- to mid-elevation forests (Kelt, 1989; Patterson et al., 1989).

*Irenomys tarsalis* primarily is granivorous-frugivorous (Meserve et al., 1988), but also eats green vegetation, fungi, and grass seeds. Captives ate rolled oats, apples, and bamboo shoots, but refused carrots, bamboo blossoms, and grubs (Pearson, 1983).

Mammals species with which *I. tarsalis* is associated are other species of the Valdivian-temperate rainforest such as *Akodon olivaceus*, *Abrothrix longipilis*, *Abrothrix sanborni*, *Oligoryzomys longicaudatus*, *Geoxus valdivianus*, and *Auliscomys micropus*. Additionally, in the central portion of its range *I. tarsalis* is sympatric with the marsupials *Rhyncholestes raphanurus* and *Dromiciops australis* (Greer, 1965; Meserve et al., 1991a, 1991b; Pearson, 1983).

Remains of *I. tarsalis* have been collected from pellets of barn owls (*Tyto alba*) and great horned owls (*Bubo virginianus*—Pearson, 1987; O. P. Pearson, in litt.). Additional potential predators include foxes (*Pseudalopex griseus* and *P. fulvipes*), the guíña (*Felis guigna*), and the pygmy owl (*Glaucidium nanum*).

*Irenomys tarsalis* is a docile species that may be removed from live traps by hand. When released they often climb into bamboo or trees, but also may scamper across the forest floor or descend burrows. They climb narrow bamboo shoots by shinnying, and advancing by moving either both hind feet or both forefeet alternately (Pearson, 1983).

The Chilean tree mouse evidently is relatively uncommon or trap-shy, as it generally is captured only after  $\geq 2$  days of trap effort (Greer, 1965; Meserve et al., 1991a). It also appears hesitant to enter enclosed box-type traps (Patterson et al., 1989).

**REMARKS.** Osgood (1943:220) notes that the typewritten label for *Reithrodon longicaudatus* gives "Melinka" (= Melinka) as the type locality, whereas Philippi (1900:64) published "Habitat in litore occidentali Patagoniae." Because Melinka lies within the known range of *I. tarsalis longicaudatus*, Osgood (1943) accepted this as the actual type locality. Recent surveys have failed to document *I. tarsalis* in the Guaitecas or Chonos Islands (just south of the Guaitecas Islands—B. D. Patterson and M. H. Gallardo, pers. comm.), and its present status is uncertain. Thomas (1919) suggested that *I. tarsalis* is most closely related to *Phyllotis*, although the systematic relations of this genus remain in need of study. *Irenomys* is derived from the Greek *iren*, "so named as a memento that its recognition coincided with the arrival of a glorious peace" (the end of World War I—Thomas, 1919:201). This species also is known as the laucha arborea (Greer, 1965; Mann, 1978) and the colilarga oreja negra (Olrog and Lucero, 1980). I thank W. E. Glanz, B. K. Lang, B. D. Patterson, and O. P. Pearson for useful comments on a draft of the manuscript.

#### LITERATURE CITED

- GREER, J. K. 1965. Mammals of Malleco Province, Chile. Publications of the Museum, Michigan State University, Biology Series, 3:49–152.
- HERSHKOVITZ, P. 1962. Evolution of Neotropical cricetine rodents with special reference to the phyllotine group. *Fieldiana, Zoology*, 46:1–524.
- KELT, D. A. 1989. Biogeography and assemblage structure of small mammals across a transition zone in southern Chile. M.S. thesis, Northern Illinois University, DeKalb, 182 pp.
- MANN, G. 1978. Los pequeños mamíferos de Chile: marsupiales, quirópteros, edentados y roedores. *Gayana (Concepción), Zoología*, 40:1–342.
- MESERVE, P. L., D. A. KELT, AND D. R. MARTINEZ. 1991a. Geographical ecology of small mammals in continental Chile Chico, South America. *Journal of Biogeography*, 18:179–187.
- MESERVE, P. L., B. K. LANG, R. MURÚA, A. MUÑOZ, AND L. A. GONZALEZ. 1991b. Characteristics of a terrestrial small mammal assemblage in a temperate rainforest in Chilean. *Revista Chilena de Historia Natural*, 64:157–169.
- MESERVE, P. L., B. D. PATTERSON, AND B. K. LANG. 1988. Trophic relationships of small mammals in a Chilean temperate rainforest. *Journal of Mammalogy*, 69:721–739.
- OLROG, C. C., AND M. M. LUCERO. 1980. Guía de los mamíferos Argentinos. Ministerio de cultura y educación, Fundación Miguel Lillo. San Miguel de Tucumán, Argentina, 151 pp.
- OSGOOD, W. H. 1943. The mammals of Chile. *Field Museum of Natural History, Zoology Series*, 30:1–268.
- PATTERSON, B. D., P. L. MESERVE, AND B. K. LANG. 1989. Distribution and abundance of small mammals along an elevational transect in temperate rainforests of Chile. *Journal of Mammalogy*, 70:67–78.
- . 1990. Quantitative habitat associations of small mammals along an elevational transect in temperate rainforests of Chile. *Journal of Mammalogy*, 71:620–633.
- PEARSON, O. P. 1983. Characteristics of a mammalian fauna from forests in Patagonia, southern Argentina. *Journal of Mammalogy*, 64:476–492.
- . 1987. Mice and the postglacial history of the Trafal valley of Argentina. *Journal of Mammalogy*, 68:469–478.
- PHILIPPI, R. A. 1900. Figuras i descripciones de los murideos de Chile. *Anales del Museo Nacional de Chile, Entre*, 14a:1–70.
- REISE, D., AND W. VENEGAS S. 1987. Catalogue of records, localities and biotopes from research work on small mammals in Chile and Argentina. *Gayana (Concepción), Zoología*, 51:103–130.
- THOMAS, O. 1919. On small mammals collected by Sr. E. Budin in northwestern Patagonia. *The Annals and Magazine of Natural History*, 9:199–212.

Editors of this account were GUY N. CAMERON and KARL F. KOOPMAN. Managing editor was JOSEPH F. MERRITT.

D. A. KELT, DEPARTMENT OF BIOLOGY, UNIVERSITY OF NEW MEXICO, ALBUQUERQUE 87131, AND DIVISION OF MAMMALS, FIELD MUSEUM OF NATURAL HISTORY, ROOSEVELT ROAD AT LAKE SHORE DRIVE, CHICAGO, ILLINOIS 60605.