



WISSENSCHAFTLICHE KURZMITTEILUNGEN

A northern and threatened population of *Irenomys tarsalis* (Mammalia: Rodentia) from central Chile

By BÁRBARA SAAVEDRA and J. A. SIMONETTI

Departamento de Ciencias Ecológicas, Universidad de Chile, Santiago, Chile

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Irenomys tarsalis (Philippi, 1900), the Chilean tree mouse or “laucha arbórea”, is the single species of a sigmodontine genus endemic to the temperate forests of southern Chile and Argentina (REDFORD and EISENBERG 1992). The geographic distribution of this rare rodent is poorly known. Along the mountain range of Chile, *I. tarsalis* is known to occur from Chillán (36°54' S, 71°25' W) to Puerto Ibáñez (46°04' S, 72°02' W). Along the coastal range, *I. tarsalis* reportedly extends from Nahuelbuta (37°58' S) down to Chiloé (42° S) and Guaitecas Islands (46° S; REISE and VENEGAS 1974, 1987; PINE et al. 1979). The distribution along the Chilean coastal range, however, is very poorly known, and northern limits are regarded as tentative (KELT 1993). Here we report on a population of *I. tarsalis* 210 km north of its currently known limit, associated to remnants of the endangered temperate Maulino forest, along the coastal range of central Chile (Fig. 1).

Ongoing monitoring of small mammals at a large remnant (approximately 600 ha) of temperate forest, at which National Reserve Los Queules (35°59' S–72°41' W, 540–

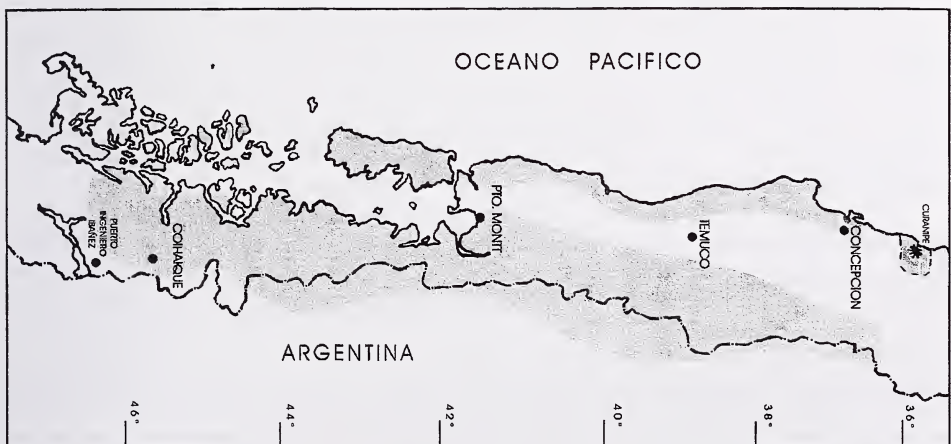


Fig. 1. New distribution of *Irenomys tarsalis* with the present record (asterisk) in the coastal range, extending northern limit approximately 210 km. The southern limit remains unknown (modified from KELT 1993).

570 masl) is located, and neighboring forest fragments (Fragment 1: 35°58' S–72°42' W, 3 ha, 348 masl and Fragment 3: 35°59' S–72°41' W, 6 ha, 570 masl) surrounded by pine plantations (*Pinus radiata*), have revealed a small population of *I. tarsalis* at both the Reserve as well as a forest fragment. This is a typical Maulino forest, with *Nothofagus glauca*, *Aetoxicum punctatum*, *Cryptocarya alba*, *Gevuina avellana*, and *Persea lingue* as the dominant tree species (SAN MARTÍN and DONOSO 1995).

Sampling consists of bimonthly live-trapping sessions for at least five trapping nights each time. Since January 1999, at Los Queules National Reserve we operated two grids of 10×5 (3,600 m²) medium-sized Shermann traps, each trap located 10 m apart. At Fragment 1, we operated a 10×5 (3,600 m²) grid, half of which is set inside the native forest, while the other half lies into the *P. radiata* plantation. At Fragment 3, we operated a 6×5 (2,000 m²) trap grid inside the fragment. Additionally, we ran a 10×5 (3,600 m²) grid in the adjacent *P. radiata* plantation. Traps were baited with rolled oats and checked daily at dawn, as all small mammals are nocturnal.

To date, we have captured, marked and released five adult individuals of *I. tarsalis*. Recaptures have been low, as only three of them were recaptured just once. Four individuals (two males and two females) were captured in Los Queules National Reserve, while one female was found in Fragment 3. No specimen has been captured or recaptured in Fragment 1 or in the *P. radiata* plantation. Captures took place in January, April, and June. Body measurements are: body length 8.9–11 cm, tail length 14.6–15 cm, and hind foot 2.8 cm. All individuals escaped by climbing trees after they were released, corroborating the arboreal habits of the species (PEARSON 1983). Besides *Irenomys*, we also found three other murid species (*Abrothrix longipilis* (Waterhouse, 1837), *A. olivaceus* (Waterhouse, 1837), *Oligoryzomys longicaudatus* (Bennett, 1832), one caviomorph (*Octodon bridgesi* Waterhouse, 1845), and one marsupial (*Thylamys elegans* Waterhouse, 1839). We also captured the introduced black rat, *Rattus rattus* (Linnaeus, 1758) in all forest remnants and pine plantations surveyed (SIMONETTI 1983).

Irenomys tarsalis is regarded as a rare or uncommon species (GREER 1966; PATTERSON et al. 1989, 1990; MESERVE et al. 1991). Its rarity is depicted by the fact that *I. tarsalis* represents only three out of nearly 1,700 capture records from 63 localities in Chile and neighboring Argentina (REISE and VENEGAS 1987). In fact, our trapping success is only 0.16% (out of 4,907 trap/nights), compared to 3.3% of *Abrothrix longipilis*, 2.4% of *A. olivaceus*, and 2.2% of *Oligoryzomys longicaudatus*.

We also found remains of *I. tarsalis* among scats of *Pseudalopex griseus* (Gray, 1837). This fox inhabits the Reserve and uses service roads along the *P. radiata* plantations (ACOSTA and SIMONETTI 1999; MUÑOZ and MURÚA 1990). One out of 22 feces (4.5%) collected in September 1998 and January 1999, contained molars depicting “partial transverse lamination”, clearly attributable to *I. tarsalis* (HERSHKOVITZ 1962). The remains belonged to a single adult individual, found among remains of 25 other rodent specimens of four different taxa, including *Abrothrix* sp., *Phyllotis* sp., and *Octodon bridgesi*.

The presence of *I. tarsalis* over 200 km north of the northern known limits supports the contention that this elusive rodent may have ranged into central Chile, but deforestation could have excluded it except from forest remnants (KELT 1993). Coastal forests of central-south Chile remained less affected by Pleistocene glaciation processes (ARMESTO et al. 1995), probably acting as refuges for *I. tarsalis*. The northernmost population that we discovered, becomes then extremely valuable to test phylogeographic hypotheses and to reconstruct the biogeographic history of small mammalian fauna during the Pleistocene and Holocene in south-central Chile (e.g., MESERVE and KELT 1990). Unfortunately, this northern *I. tarsalis* population might vanish from their northern grounds at the same pace native forests are being eliminated or replaced, due to the scarce representation of Maulino forests in Chilean's Protected Areas System (SIMONETTI and ARMESTO 1991).

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References

- ACOSTA, G.; SIMONETTI, J. A. (1999): Guía de huellas de once especies de mamíferos del bosque templado chileno. Bol. Museo Nac. Hist. Nat. (Chile) **48**, 19–27.
- ARMESTO, J. J.; ARAVENA, J. C.; VILLAGRAN, C.; PÉREZ, C.; PARKER, G. G. (1995): Bosques templados de la cordillera de la Costa. In: Ecología de los bosques nativos de Chile. Ed. by J. J. ARMESTO, C. VILLAGRAN, and M. KALIN ARROYO. Santiago: Ed. Universitaria. Pp. 199–213.
- GREER, J. K. (1966): Mamíferos de la Provincia de Malleco. Angol: Publicación del Museo “Dillman S. Bullock”.
- HERSHKOVITZ, P. (1962): Evolution of Neotropical cricetine rodents with special reference to phyllotine group. Fieldiana, Zoology **46**, 1–524.
- KELT, D. A. (1993): *Irenomys tarsalis*. Mammalian Species **447**, 1–3.
- MESERVE, P. L.; KELT, D. A. (1990): The role of aridity and isolation on central Chilean small mammals: a reply to CAVIERES and IRIARTE (1989). J. Biogeogr. **17**, 681–689.
- MESERVE, P. L.; KELT, D. A.; MARTINEZ, D. R. (1991): Geographical ecology of small mammals in continental Chile Chico, South America. J. Biogeogr. **18**, 179–187.
- MUÑOZ, A.; MURUA, R. (1990): Control of small mammals in a pine plantation (Central Chile) by modification of the habitat of predators (*Tyto alba*, Strigiforme and *Pseudolapex* sp., Canidae). Acta Oecologica **11**, 251–261.
- PATTERSON, B. D.; MESERVE, P. L.; LANG, B. K. (1989): Distribution and abundance of small mammals along an elevational transect in temperate rainforest of Chile. J. Mammalogy **70**, 67–78.
- PATTERSON, B. D.; MESERVE, P. V.; LANG, B. K. (1990): Quantitative associations of small mammals along an elevational transect in temperate rainforest of Chile. J. Mammalogy **71**, 620–633.
- PEARSON, O. P. (1983): Characteristics of a mammalian fauna from forests in Patagonia, southern Argentina. J. Mammalogy **64**, 476–492.
- PINE, R. H.; MILLER, S. D.; SCHAMBERGER, M. L. (1979): Contributions to the mammalogy of Chile. Mammalia **43**, 339–376.
- REDFORD, K. H.; EISENBERG, J. F. (1992): Mammals of the Neotropics. Vol. 2 The Southern Cone. Chicago: Univ. Press.
- REISE, D.; VENEGAS, W. (1974): Observaciones sobre el comportamiento de la fauna de micromamíferos en la región de Puerto Ibáñez (Lago General Carrera), Aysén, Chile. Bol. Soc. Biol. Concepción (Chile) **74**, 71–85.
- REISE, D.; VENEGAS, W. (1987): Catalogue records, localities and biotopes from researchwork on small mammals in Chile and Argentina. Gayana, Zoología **51**, 103–130.
- SAN MARTIN, J.; DONOSCO, C. (1995): Estructura florística e impacto antrópico en el Bosque Maulino de Chile. In: Ecología de los bosques nativos de Chile. Ed. by J. J. ARMESTO, C. VILLAGRAN, and M. KALIN ARROYO. Santiago: Ed. Universitaria. Pp. 153–168.
- SIMONETTI, J. A. (1983): Occurrence of the black rat (*Rattus rattus*) in central Chile. Mammalia **47**, 131–132.
- SIMONETTI, J. A.; ARMESTO, J. J. (1991): Conservation of the temperate ecosystems of Chile: fine versus coarse-filter approach. Rev. Chil. Hist. Nat. **64**, 615–626.

Authors' address: BÁRBARA SAAVEDRA and JAVIER A. SIMONETTI, Departamento de Ciencias Ecológicas, Facultad de Ciencias, Universidad de Chile, Casilla 653, Santiago, Chile (e-mail: bsaavedr@pregrado.ciencias.uchile.cl)

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