

**A COLLECTION OF FLEAS (SIPHONAPTERA) FROM THE SAN MARTIN
RESERVE, VALDIVIA PROVINCE, CHILE**

MICHAEL W. HASTRITER, MAURICIO E. ALARCÓN, AND MICHAEL F. WHITING

(MWH) Monte L. Bean Life Science Museum, Brigham Young University, 290 MLBM, P.O. Box 20200, Provo, UT 84602-0200, U.S.A. (e-mail: hastritermw@sprintmail.com); (MEA) Departamento de Zoología, facultad de Ciencias Naturales y Oceanográficas, Universidad de Concepción, Casilla 160-C, Concepción, Chile; (MFW) Department of Zoology, 574 Widtsoe Building, Brigham Young University, Provo, UT 84602, U.S.A. (e-mail: MichaelL.Whiting@byu.edu)

Abstract.—During September 1999, seven species of fleas were collected from small mammals in the San Martin Reserve, Valdivia Province, Chile. The rare species *Barreropsylla excelsa*, Jordon, reported only once in Chile from Aisén Province, is reported from Valdivia Province, Chile. A summary of the known distribution of each of the seven species is provided.

Key Words: *Barreropsylla*, fleas, Siphonaptera, Valdivia, Chile

Beaucournu and Gallardo (1991, 1992) list 91 species of fleas in Chile. Although this is a significant number of species, little is known about the host specificity, seasonal, and geographic distribution for most of them. This report provides an account of flea species collected during the early Chilean spring within the San Martin Reserve, Valdivia Province, Chile, and summarizes the known host and locality data for each species.

MATERIALS AND METHODS

Fleas were collected from small mammals in the San Martin Reserve, Valdivia Province, Chile (39°38'S, 73°07'W) on September 14–17, 1999. The 72 hectare reserve, located 30 km northeast of Valdivia in the cool temperate rain forest of the precordillera of southern Chile, receives annual rainfall of ~2,500 mm (75% between April and September) (Murúa et al. 1987). The dominant climax vegetation includes *Nothofagus obliqua* (Blume) and *Aextoxi-*

con punctatum Ruiz and Pavón, the bromeliad *Gregia sphacelata* Regel, understory shrubs of *Rubus constrictus* Lefèvre and P.J. Mueller, and thick stands of *Chusquea quila* Kunth (bamboo, quila) and *Rosa moschata* Herrmann. The latter two predominate in more open and unshaded areas. Much of the ground surface in densely shaded areas is covered with bryophytes, ferns and fungi.

Standard aluminum collapsible Sherman® traps baited with oatmeal were set on four consecutive nights in linear transects at five locations within the reserve. The density of under-story vegetation necessitated trapping only areas adjacent to existing roads and trails. Under-story plant communities of *C. quila* and *R. constrictus* were dominant trapping habitats. Three weeks of continuous rainy weather preceded trapping and persisted throughout the trapping period. Trapped mammals were shaken from traps into cloth or plastic bags at each capture site, sacrificed by cervical dislocation

and transported to the field station. Fleas were obtained by brushing the animals and subsequently washing each thoroughly (Hastriter 2000). They were prepared by conventional techniques and mounted on glass slides in Canada balsam using, 12 mm cover-slips (#1 thickness). Unless otherwise noted, all specimens examined were from the San Martin Reserve. Mammals were preserved in 10% formalin and returned to the Instituto de Ecología y Evolución, Universidad Austral de Chile, Valdivia, Chile. Recognition of mammalian taxa follows the regime of Wilson and Reeder (1993) and Smith and Patton (1993).

Fifty-five rodents were trapped during 471 trap nights (11.6% capture rate) representing five species [*Oligoryzomys longicaudatus* (Bennett) (n = 29, 21 ♂, 8 ♀), *Akodon olivaceus* (Waterhouse) (n = 22, 8 ♂, 14 ♀), *Rattus rattus* (L.) (n = 2 ♀), *Abrothrix longipilis* (Waterhouse) (n = 1 ♂), and *Pearsonomys annectus* Patterson (n = 1 ♀)]. Fleas were not recovered from the latter three species. The overall flea index (average number of fleas per host) was 0.87. Forty-one percent of *Ol. longicaudatus* (9 ♂, 3 ♀) and 54% of *Ak. olivaceus* (4 ♂, 8 ♀) harbored one or more fleas.

Ctenophthalmidae

Chiliopsylla allophyla allophyla (Rothschild 1908)

Material examined.—1 ♂, ex *Ak. olivaceus*, San Martin Reserve; 1 ♀, ex either *Ak. olivaceus* or *Ol. longicaudatus*, Castro National Park, Chiloé Island, Chiloé Province, Chile, April 1999, Patricio Chandía; 3 ♂, 4 ♀, ex *Dromiciops gliroides* Thomas, Cerro Caracol (37°00'S, 72°30'W), Concepción, Concepción Province, Chile, 15 April 1981, Artigas; 1 ♀, ex *D. gliroides*, Cerro Caracol (37°00'S, 72°30'W), Concepción, Concepción Province, Chile 1968, Chiang.

Other records.—ARGENTINA: Smit (1955): 1 ♀, ex *Oryzomys longicaudatus* = *Ol. longicaudatus*, San Pedro, south shore of Lake Nahuel Huapi, Rio Negro Province,

Argentina, February 1954. CHILE: Rothschild (1908): 1 ♂, ex *Dromiciops australis* = *D. gliroides*, Temuco, Cautín Province, November 1906; Hopkins and Rothschild (1966): 5 ♂, 5 ♀, plus many females in alcohol, ex *D. gliroides*, Valdivia, Valdivia Province, 1924; and Beaucornu and Kelt (1990): 1 ♂, ex *Irenomys tarsalis* (Philippi), 7 km E SE of Puerto Octay, Osorno Province, September 1985.

Remarks.—Dr. Roberto Schlatter, Instituto de Zoología, Universidad Austral de Chile, Valdivia, kindly provided a series of 5 males and 11 females of this uncommon flea to the senior author just prior to our field collection trip. They were collected from a single specimen of *D. gliroides* in the "Valdivia city environs" during July 1981 by Dr. Schlatter. The natural host for *C. a. allophyla* is the tiny arboreal marsupial *D. gliroides*. *Dromiciops* may hibernate during the cold Chilean winter months (June through August/September) according to Rageot (1979). We were unsuccessful in collecting *Dromiciops*, or locating active nests. A number of older nest boxes (mounted three to four meters high on the trunks of *Nothofagus* trees) contained deteriorated nesting materials of *Dromiciops* from previous summer seasons. Their nests are often constructed in the thickets of quila 60 centimeters or more above the ground, in addition to building nests in the hollows of trees and logs (especially during the winter months). *Chiliopsylla a. allophyla* would likely be found in large numbers either on the animal, or in its nest during the winter months. It should be noted that the distribution of *D. gliroides* includes only south-central Chile from Concepción south to Chiloé Island and east just beyond the Argentina border. This flea has been collected throughout the range of *Dromiciops* except for areas north of Cautín Province, Chile.

Hystrichopsyllidae

Ctenoparia inopinata Rothschild 1909

Material examined.—1 ♂, 2 ♀, ex *Ak. olivaceus*; 2 ♂, 1 ♀, ex *Ol. longicaudatus*.

Other records.—ARGENTINA: Beaucornu and Alcover (1989): 49 ♂, 52 ♀, ex 99 specimens from *Ak. longipilis*, one from *Geoxys valdivianus* (Philippi), and one from *Or. longicaudatus*, adjacent to a series of lakes in Neuquén Province, December 1987–May 1988. CHILE: Rothschild (1909): 1 ♀, ex *Ak. olivaceus*, Valparaíso Province; Rothschild (1911b): unspecified number of females, ex unknown, Santiago; Jameson and Fulk (1977): 4 ♀, ex *Ak. longipilis*, E of Molina, Santiago Province, April 1973; Beaucornu, et al. (1986): 1 ♂, 1 ♀, ex *Ak. olivaceus*, Puerto Carmen, Chiloé Island, Chiloé Province, January 1985, 1 ♀, ex *G. valdivianus*, San Martin, Valdivia Province, June 1985; Beaucornu and Kelt (1990): 1 ♀, ex *Ak. longipilis*, 22 km W NW of Puerto Octay, Osorno Province, September 1985, 2 ♂, 6 ♀, ex *Ak. olivaceus*, Coyhaique National Reserve, Aisén Province, February 1987.

Remarks.—This flea is common in temperate rain forests of Neuquén Province, Argentina among *Nothofagus* trees, but is collected only infrequently in similar Chilean temperate rain forests dominated by species of *Nothofagus* and thick stands of quila. Perhaps more intensive collection efforts during winter months would demonstrate more abundant populations in Chilean temperate rain forest, although lower elevations of coastal Chile may be limiting for this species. *Abrothrix longipilis* is the preferred host of *C. inopinata*.

Ctenoparia topali Smit 1963

Material examined.—1 ♂, ex *Ak. olivaceus*.

Other records.—ARGENTINA: Smit (1963): 1 ♂, ex (rodent nest), El Bolsón (41°59'S, 71°35'W), Rio Negro Province, June 1961, elevation 700 m; and Beaucornu and Alcover (1989): 31 ♂, 36 ♀, ex *Ak. longipilis*, Verde Lagoon, *Ak. longipilis*, *Ak. olivaceus*, *Or. longicaudatus*, and *I. tarsalis*, Lake Curruhue, *Auliscomys micropus* (Waterhouse,) and *Or. longicaudatus*, Lake Norquinco, *Ak. longipilis*, *Or. longicauda-*

tus and *I. tarsalis*, Ruca Malen, and *Akodon* sp., Lake Quillen, Neuquén Province, December 1987–May 1988. CHILE: Beaucornu, et al. (1986): 1 ♂, ex *Or. longicaudatus*, Puerto Carmen, Chiloé Island, Chiloé Province, July 1985; Beaucornu, et al. (1988): 1 ♀, ex *Ak. olivaceus brachiotis* = *Ak. olivaceus*, San Martin, Valdivia Province, My 1986, 1 ♀, ex *Ak. o. brachiotis*, Quilan Island, Chiloé Province, January 1987, 1 ♀, ex *Akodon sanborni* = *Abrothrix sanborni* (Osgood), Quilan Island, Chiloé Province, January 1987; and Beaucornu and Kelt (1990): 1 ♀, ex *Au. micropus*, Coyhaique National Reserve, Aisén Province, September 1986, 2 ♂, 3 ♀, ex *Ak. olivaceus* and 3 ♂, 5 ♀, ex *Or. longicaudatus*, Coyhaique National Reserve, Aisén Province, March 1987.

Remarks.—*Ctenoparia topali* is essentially sympatric with *C. inopinata*, although *C. topali* does not occur as far north. It is recorded northern limit occurs just north of Concepción, approximately 36°S latitude. This flea displays less host specificity than *C. inopinata*, occurring on most of the common small mammals (species of *Abrothrix*, *Akodon*, *Auliscomys*, and *Oligoryzomys*) in the coastal temperate rain forest. Collections in Argentina generally have been made at higher elevations than those in Chile. Populations of both *C. topali* and *C. inopinata* appear to increase with elevation as each is more abundant in Argentina than in similar habitats at lower elevations in coastal Chile.

Rhopalopsyllidae

Tetrapysyllus rhombus Smit 1955

Material examined.—2 ♂, 4 ♀, ex *A. olivaceus*; 2 ♂, 1 ♀, ex *Ol. longicaudatus*.

Other records.—ARGENTINA: Smit (1963): 2 ♂, 2 ♀, ex *Or. longicaudatus philippi* = *Ol. longicaudatus*, August 1961, 3 ♂, 3 ♀, ex *Ak. o. brachiotis*, April 1961, 3 ♂, 5 ♀, ex *Ak. longipilis suffusus* = *Ab. longipilis*, August 1961, 1 ♂, 2 ♀, ex *Or. philippi* or *Ak. o. brachiotis*, January 1961,

1 ♀, ex *Or. l. philippi* or *Ak. o. brachiotis*, August 1961, 3 ♀, ex *Ak. o. brachiotis* or *Ak. l. suffusus*, June 1961, 1 ♂, ex *Or. l. philippi* or *Ak. o. brachiotis* or *Ak. l. suffusus*, April 1961, 4 ♂, 6 ♀, (nest), June 1961, 4 ♂, 3 ♀, (nest), April 1961, 1 ♂, 1 ♀, (nest), August 1961, 1 ♂, forest litter, October 1961, El Bolsón (41°59'S, 71°35'W), Rio Negro Province; Beaucornu and Gallardo (1988): number of specimens, host data, and collection dates omitted, ~ 40 km E NE of Bariloche, Rio Negro Province; and Beaucornu and Alcover (1989): 31 ♂, 41 ♀, [ex *Rattus norvegicus* (Berkhout) and *Ak. longipilis*, Lake Huechulafquen, ex *Ak. longipilis*, Verde Lagoon, ex *Octodon bridgesi* Waterhouse, *Ak. longipilis*, *Ak. olivaceus*, and *Aconaemys* sp., Lake Curruhue, ex *Ak. longipilis*, Hua Hum, ex *Ak. longipilis*, Ruca Malen, ex *Ak. longipilis* and *Or. longicaudatus*, Pampa de Hui Hui], Neuquén Province, December 1987–May 1988. CHILE: Beaucornu and Kelt (1990): 1 ♂, 1 ♀, ex *Ak. olivaceus*, 7 km E SE Puerto Octay, Osorno Province, September 1985, 1 ♀, ex *Au. micropus*, November 1986, 2 ♂, 2 ♀, ex *Ak. olivaceus*, March 1987, 1 ♀, ex *G. valdivianus*, March 1987, Coyhaique National Reserve, Aisén Province, 1 ♂, 1 ♀, ex *Ak. longipilis* December 1986, 2 ♀, ex *Reithrodon physodes* = *Reithrodon auritus* (Fischer), March 1987, 4.5 km E Coyhaique Alto, Aisén Province, 2 ♂, ex *Ak. longipilis*, February 1987, Puerto Ibañez, El Salto, Aisén Province.

Remarks.—The specificity of hosts can not be determined by existing records. The only large series available was collected by Beaucornu and Alcover (1989) and unfortunately they did not address the number of *T. rhombus* that they collected with their associated hosts. Existing host associations would suggest they parasitize the dominant small rodents in their range. *Akodon olivaceus*, *Ab. longipilis*, and *Ol. longicaudatus* yield most of the resulting records, but this may only reflect those rodents most frequently captured.

Tetrapsyllus tantillus (Jordan and Rothschild 1923)

Material examined.—1 ♂, ex *Ak. olivaceus* (collected in an empty lot within the city limits of Valdivia, Valdivia Province, Chile, 12 September 1999, M.W. Hastriter).

Other records.—ARGENTINA: Jordan and Rothschild (1923): 4 ♀, ex *Ctenomys haigi* Thomas, Cholila, Chubut Province, 700 m, January 1920; Smit (1955): 4 ♂, 4 ♀, ex *Or. longicaudatus*, *Irenomys* sp., *Notiomys valdivianus fossor* = *G. valdivianus* (nest), *Rattus* sp., and *R. norvegicus*, San Pedro, south shore of Lake Nahuel Huapi, Rio Negro Province; Beaucornu and Alcover (1989): number of specimens, hosts, and date of collections omitted, ex *Or. longicaudatus*, *Ak. longipilis*, *Au. micropus*, and *Ak. olivaceus*, Neuquén Province; and Smit (1963): 1 ♂, 1 ♀, ex *Ak. o. brachiotis*, 1 X, ex *Or. l. philippi*, 1 ♂, 1 ♀, ex *Ak. l. suffusus*, 5 ♂, 2 ♀, ex (nest), El Bolsón (41°59'S, 71°35'W), Rio Negro Province. CHILE: Smit (1968): 5 ♂, 3 ♀, (from formalin pit traps), Farellones, Santiago Province, elevation 2,000–2,400 m; Smit and Rosický (1972): 1 ♂, ex *Akodon* sp., Lake Pehue, Magalanes Province; Jameson and Fulk (1977): 1 ♀, ex *Spalacopus cyanus* (Molina), 1 ♂, 2 ♀, ex *Ak. olivaceus*, 2 ♂, ex *Ak. longipilis*, 1 ♂, ex *Phyllotis darwini* (Waterhouse), Coquimbo Province, 1 ♂, 4 ♀, ex *Ak. longipilis*, Santiago Province; and Beaucornu and Kelt (1990): 10 ♂, 10 ♀, ex *R. physodes*, 6 ♂, 9 ♀, ex *Akodon xanthorhinus* (Waterhouse), 10 ♂, 10 ♀, ex *Phyllotis xanthopygus* (Waterhouse), 12 ♂, 12 ♀, ex *Ak. longipilis*, 3 ♀, ex *Euneomys* sp., 5 ♀, ex *Au. micropus*, Aisén Province.

Remarks.—A widely dispersed flea, reported from Coquimbo Province in the north through much of Magalanes Province in the south and east into adjacent regions of Argentina. *Phyllotis darwini* extends only into the northern fringe of the range of *T. tantillus* and is probably an accidental association. *Abrothrix longipilis* is the most commonly infested host of this

flea, although other associated mammals are infested readily. The significant number of specimens (eight!) collected in formalin pit traps (Smit 1968) would suggest that this flea may display a peculiar host seeking behavior (unassociated with the nest) as in some pulicid fleas, e.g., species of *Pulex* L. and *Ctenocephalides* Stiles and Collins.

Stephanocircidae

Barreropsylla excelsa Jordan 1953

Material examined.—1 ♀, ex: *Ol. longicaudatus* ♀, 14 September 1999; and 1 ♀, ex: *Ak. olivaceus* ♀, 16 September 1999.

Other records.—ARGENTINA: Jordan (1953): 1 ♂, 1 ♀, ex *Akodon* sp., Bariloche, Lake Nahuel Huapi, Rio Negro Province, 780 m, July 1952; Smit (1955): 1 ♂, 1 ♀, ex *Euneomys dabbenei* = *Euneomys petersoni* J.A. Allen, July 1953, 1 ♀, ex *Akodon neocensus* Thomas, July 1953, San Pedro, south shore of Lake Nahuel Huapi, Rio Negro Province, elevation 810 m; Smit (1963): 1 ♀, ex *Or. l. philippi*, June 1961, 1 ♂, 2 ♀, ex *Or. l. philippi*, August 1961, 1 ♂, ex *Ak. o. brachiotis*, April 1961, 1 ♂, 1 ♀, ex *Ak. o. brachiotis*, August 1961, 1 ♀, ex *Ak. l. suffusus*, June 1961, 1 ♂, 2 ♀, ex *Ak. l. suffusus*, August 1961, 1 ♂, ex *Ak. o. brachiotis* or *Ak. l. suffusus*, June 1961, 1 ♂, 1 ♀, ex *Or. l. philippi* or *Ak. o. brachiotis*, August 1961, 1 ♂, ex *Or. l. philippi* or *Ak. o. brachiotis* or *Ak. l. suffusus*, April 1961, El Bolsón (41°59'S, 71°35'W), Rio Negro Province, elevations 300–480 m; Beaucornu and Gallardo (1988): number of specimens, host data, and collection dates omitted, ~ 40 km E NE of Bariloche (type locality), Rio Negro Province; and Beaucornu and Alcover (1989): 6 ♂, 14 ♀, (ex *Ak. longipilis* and *Or. longicaudatus*, Lake Curruhue, ex *Or. longicaudatus*, Lake Norquingo, ex *Ak. longipilis*, Ruca Malen, and ex *Akodon* sp., Lake Quillen), Neuquén Province, December 1987 till May 1988. CHILE: Beaucornu and Kelt (1990): 2 ♂, 1 ♀, ex *Ak. longipilis*, Puerto Ibañez, Aisén Province, February 1987.

Remarks.—*Barreropsylla excelsa* has been collected only in small numbers (one to three) on individual hosts throughout its range. Beaucornu and Kelt (1990) suggest it is primarily a nest flea. This flea appears to prefer *Ol. longicaudatus*, *Ab. longipilis* and *Ak. olivaceus* throughout its limited geographic range. Although more intensive collecting will undoubtedly increase their known range, they are currently found only between a narrow band approximately 39°–44°S latitude and 71°–73°W longitude. Elevations range between 300 m and 810 m. Recorded collection dates would suggest that *B. excelsa* is most abundant during the cold rainy winter months of June through August, although Beaucornu and Kelt (1990) noted three specimens collected during February.

Spinctopsylla ares (Rothschild 1911)

Material examined.—2 ♂, 3 ♀, ex *A. olivaceus* (one flea with eggs); 3 ♂, 15 ♀, ex *Ol. longicaudatus* (six fleas with eggs); and 1 ♂, ex *Ak. olivaceus* or *Ol. longicaudatus* (found in bag).

Other records.—ARGENTINA: Smit (1955): 1 ♀, ex *Abrothrix hirta modestior* = *Ab. longipilis*, July 1952, 1 ♂, 2 ♀, ex *Ab. h. modestior*, July 1953, 1 ♀, ex *Akodon* sp., July 1952, 3 ♀, ex *Akodon nucus* = *Akodon iniscatus* Thomas, July 1953, 3 ♀, ex *Or. longicaudatus*, July 1952, 1 ♂, ex *Or. longicaudatus* July 1953, 3 ♂, 5 ♀, ex *Or. longicaudatus*, February 1954, 2 ♀, ex *N. v. fossor*, July 1953, and 2 ♀, ex *Rattus* sp., July 1952, all from San Pedro, South Shore of Lake Nahuel Huapi, Rio Negro Province; Smit (1963): 1 ♂, 8 ♀, ex *Or. l. philippii*, 350–480 m, 2 ♂, 1 ♀, ex *Ak. o. brachiotis*, 480 m, 1 ♂, 2 ♀, ex *Ak. l. suffusus*, 300 m, 2 ♂, 4 ♀, ex *Or. l. philippi* or *Ak. o. brachiotis*, 350–360 m, 2 ♀, ex *Ak. o. brachiotis*, or *Ak. l. suffusus*, 360 m, 4 ♀, ex *Or. l. philippii*, or *Ak. o. brachiotis*, or *Ak. l. suffusus*, 480 m, and 1 ♂, 1 ♀, ex *R. norvegicus*, 350–380 m, El Bolsón (41°59'S, 71°35'W), Rio Negro Province, January–October 1961; Beaucornu and

Alcover (1989): 53 ♂, 105 ♀, ex *R. norvegicus*, *Ak. longipilis*, *G. valdivianus*, Lake Huechulafquen, ex *Ak. longipilis*, Cerro Chapelco, ex *Ak. longipilis*, Verde Lagoon, ex *R. norvegicus*, *Ak. olivaceus*, *Ak. longipilis*, *Or. longicaudatus*, *I. tarsalis*, Lake Curruhue, ex *Ak. longipilis*, Lake Lolog, ex *Ak. longipilis*, *I. tarsalis*, Quilanlahue, ex *Or. longicaudatus*, *Ak. longipilis*, Lake Norquingo, ex *Ak. longipilis*, Hua Hum, ex *Ak. longipilis*, *Or. longicaudatus*, *I. tarsalis*, Ruca Malen, ex *Ak. longipilis*, Volcan Huanqui Hue, Neuquén Province, December 1987–May 1988. CHILE: Rothschild (1911a): 1 ♀, ex *Ak. olivaceus*, Temuco, Cautín Province, February 1908; Smit and Rosický (1972): 1 ♀, ex *Akodon* sp., Estancia Pudeto (51°05'S, 73°00'W), Lake Pehue, Magallanes Province, February 1969; Jameson and Fulk (1977): 1 ♀, ex *P. darwini*, Fray Jorge National Park, Coquimbo Province, June 1972, and 1 ♀, ex *Or. longicaudatus*, 5 km N of La Serena, Coquimbo Province, May 1972; Beaucornu and Kelt (1990): 1 ♀, ex *Or. longicaudatus* 14.5 km N NW Puerto Octay, Osorno Province, August 1986, 1 ♂♂, ex *Chelemys macronyx* (Thomas) September 1986, 1 ♂ ex *C. macronyx*, March 1987, Coyhaique National Reserve, Aisén Province. 1 ♀, ex *Au. micropus*, 2 ♂, 10 ♀, ex *Ak. longipilis*, July 1986, 1 ♀, ex *Reithrodon physodes*, 1 ♂, 1 ♀, ex *Ak. xanthorhinus*, 6 ♀, ex *Ak. longipilis*, 2 ♂, 5 ♀, ex *Au. micropus*, 4.5 km E Coyhaique Alto, Aisén Province, March 1987, 7 ♂, 25 ♀, ex *Or. longicaudatus*, 18 ♂, 34 ♀, ex *Ak. olivaceus*, 1 ♂, ex *G. valdivianus*, Coyhaique National Reserve, Aisén Province, March 1987, 4 ♂, 8 ♀, ex *Ak. longipilis*, Puerto Ibáñez El Salto, Aisén Province, March 1987, and 1 ♀, ex *P. xanthopygus*, Puerto Ibáñez, Rocky Bluff, Aisén Province, April 1987.

Remarks.—*Sphinctopsylla ares* is a common flea ranging from the Chilean province of Elqui in the north into the southern province of Magallanes and east into Neuquén and Rio Negro Provinces, Argentina. The species demonstrates little host specificity,

occurring on most genera within the subfamily Sigmodontinae (Muridae) that are present within the flea's range. It has also been reported on species in the genera *Aconaemys* Ameghino and *Spalacopus* Wagler (Octodontidae) and on species of the marsupial genus *Marmosa* Gray (Didelphidae). *Sphinctopsylla ares* has been collected during all months of the year except for May and December [it may have been collected during these months also by Beaucornu and Alcover (1989), since they did not specify dates of collection, other than "December 1987 till May 1988"]. Multiple large eggs were present in seven of the 18 females that we collected during September. These enormous eggs have an extremely thick and well-defined chorion whose gross morphology resembles eggs of hystrichopsyllid species of *Stenoponia* Jordan and Rothschild and *Hystrichopsylla* Taschenberg.

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