

## A NEW SPECIES OF *BRACHISTOSTERNUS* (SCORPIONES, BOTHRIURIDAE) FROM CHILE, WITH REMARKS ON *BRACHISTOSTERNUS CHILENSIS*

**Andrés A. Ojanguren-Affilastro** and **Cristina Luisa Scioscia**: Museo Argentino de Ciencias Naturales “Bernardino Rivadavia” (CONICET), División Aracnología, Av. Ángel Gallardo 470, 1405 DJR Buenos Aires, Argentina.  
E-mail: andres.ojanguren@gmail.com

**ABSTRACT.** *Brachistosternus* (*Leptosternus*) *aconcagua* new species, from the Chilean central Andes, is described. *Brachistosternus* (*L.*) *chilensis* Kraepelin 1911 is redescribed. Both species are related to other Andean species of the genus and with other species from central and northern Chile.

**RESUMEN.** Se describe a *Brachistosternus* (*Leptosternus*) *aconcagua* nueva especie de los Andes centrales Chilenos. Se redescribe a *Brachistosternus* (*L.*) *chilensis* Kraepelin 1911. Ambas especies se encuentran relacionadas con las especies andinas del género y con algunas especies del centro y norte de Chile.

**Keywords:** Taxonomy, morphology, Neotropics, South America, *Brachistosternus aconcagua*

The scorpion fauna of central Chile is still poorly known, with most of the published literature consisting of short species descriptions dating from the late 19th century and early 20th century (Pocock 1893, 1898; Kraepelin 1894, 1911; Lönnberg 1897; Mello-Leitão 1932; Werner 1939). Little subsequent taxonomic work on this fauna is available and the identity of most of the species from this area needs to be confirmed.

One of the most enigmatic Chilean species is *Brachistosternus* (*Leptosternus*) *chilensis* Kraepelin 1911. This species was briefly described by Kraepelin (1911) in a key, as a variety of *B.* (*L.*) *intermedius* Lönnberg 1902, based on a female specimen from la Ligua, Valparaíso Region, Chile. No illustrations and no data were provided about collectors, dates, depositories, or type material, and no other name-bearing specimen was previously designated. Since the original description, only a few authors mentioned this species again. Dr. E. Maury revised the scorpion collection of the Museo ed Instituto di Zoologia di Torino (MIZT) and found a scorpion from the type locality labeled: “*Br. intermedius chilensis* n. var. La Ligua; Aconcagua; Chile (Sc. 64),” and he supposed that this could be the specimen used by Kraepelin (1911) to prepare his

description (E. Maury, unpublished data). After that, he implicitly accepted the validity of *B. chilensis* as a valid species, listing it as a member of the subgenus *Leptosternus* (Maury 1973). We have been able to study this specimen at the MIZT, along with Maury’s notes, and we found a difference in the number of pectinal teeth with respect to the specimen described by Kraepelin (28–29 in the specimen from the MIZT, 30 in the specimen described by Kraepelin); so we can not be sure that this specimen was used by Kraepelin (1911) to describe the species. The original locality mentioned by Kraepelin is now highly altered by human activities and the surrounding region has been subjected to intense agricultural activities. Species of *Brachistosternus* are very sensitive to environmental changes, and after several collection trips to this place we only obtained specimens of *Bothriurus coriaceus* Pocock 1893 that is more resistant to environmental changes. However, in nearby localities around La Ligua with better preserved environments, we were only able to collect a single species of *Brachistosternus*. This species is very common throughout this area and its external morphology matches the few characteristics described by Kraepelin (1911) in his description of *B. chilensis*, and corre-



sponds to the characteristics of the specimen deposited at the MIZT. Therefore, to maintain stability we consider this species as *B. chilensis*, which is redescribed in this paper.

While revising material from central Chile we have also recognized an undescribed species of *Brachistosternus* that is herein described. This species is very similar to *B. chilensis* but inhabits a slightly different environment at intermediate altitudes of the western central Andes. Both species described in this paper are similar to the Andean species of the genus as well as to other species from central and northern Chile.

## METHODS

The terminology used for the hemispermatophore structures follows Maury (1974). Trichobothrial terminology follows Vachon (1974). Terminology of the androvestigia follows Cekalovic (1973). Terminology of the telson gland follows Roig Alsina & Maury (1981). Terminology of the metasomal carinae follows Stahnke (1970), abbreviated as follows: DL = dorsal lateral; LSM = lateral suprmedian; LIM = lateral inframedian; VL = ventral lateral; VM = ventral median. Specimens from the following institutions were examined: Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," National Arachnological Collection, Argentina (MACN-Ar); Museo ed Instituto di Zoologia, Torino, Italia (MIZT); American Museum of Natural History, New York, USA (AMNH); Cátedra de Diversidad Animal I, Universidad de Córdoba, Córdoba, Argentina (CDA); Museo Zoológico del Instituto de Biología de la Universidad de Concepción, Concepción, Chile (MZUC). All measurements are given in mm, and were taken using an ocular micrometer. Illustrations were produced using a stereomicroscope and camera lucida. The hemispermatophores were dissected from surrounding tissues and observed in 80% ethanol. Localities of *Brachistosternus* (*Leptosternus*) *negrei* Cekalovic 1975 depicted in Fig. 27 were taken from Ojanguren-Affilastro (2005).

## TAXONOMY

Family Bothriuridae Simon 1880

Genus *Brachistosternus* Pocock 1893

**Type species.**—*Scorpio ehrenbergii* Ger-  
vais 1841, by original designation.

Subgenus *Brachistosternus*  
(*Leptosternus*) Maury 1973

**Type species.**—*Telegonus weijenberghii*  
Thorell 1876, by original designation.

***Brachistosternus* (*Leptosternus*)  
*aconcagua* new species**  
Figs. 1–13, 27

**Material examined.**—Holotype male, CHILE, *Valparaíso*, between Río Blanco and Juncal, 32°54'00"S, 70°11'00"W, 1950 m a.s.l., 6 January 1984, Roig Alsina (MACN-Ar 10767). Paratypes: CHILE: *Valparaíso*: 1 female, 1 juvenile, Guardia Vieja, 32°53'60"S, 70°16'60"W, 1600 m, 19 January 1984, E. Maury (MACN-Ar 10768); 3 females, 3 juveniles, Juncal, 32°52'00"S, 70°10'00"W, 1950 m, 5 January 1984, E. Maury (MACN-Ar 10769); 1 juvenile, 20 km from Portezuelo, 32°53'00"S, 70°13'00"W, 2100 m, 13 February 2005, Ojanguren & Korob (MACN-Ar 10770).

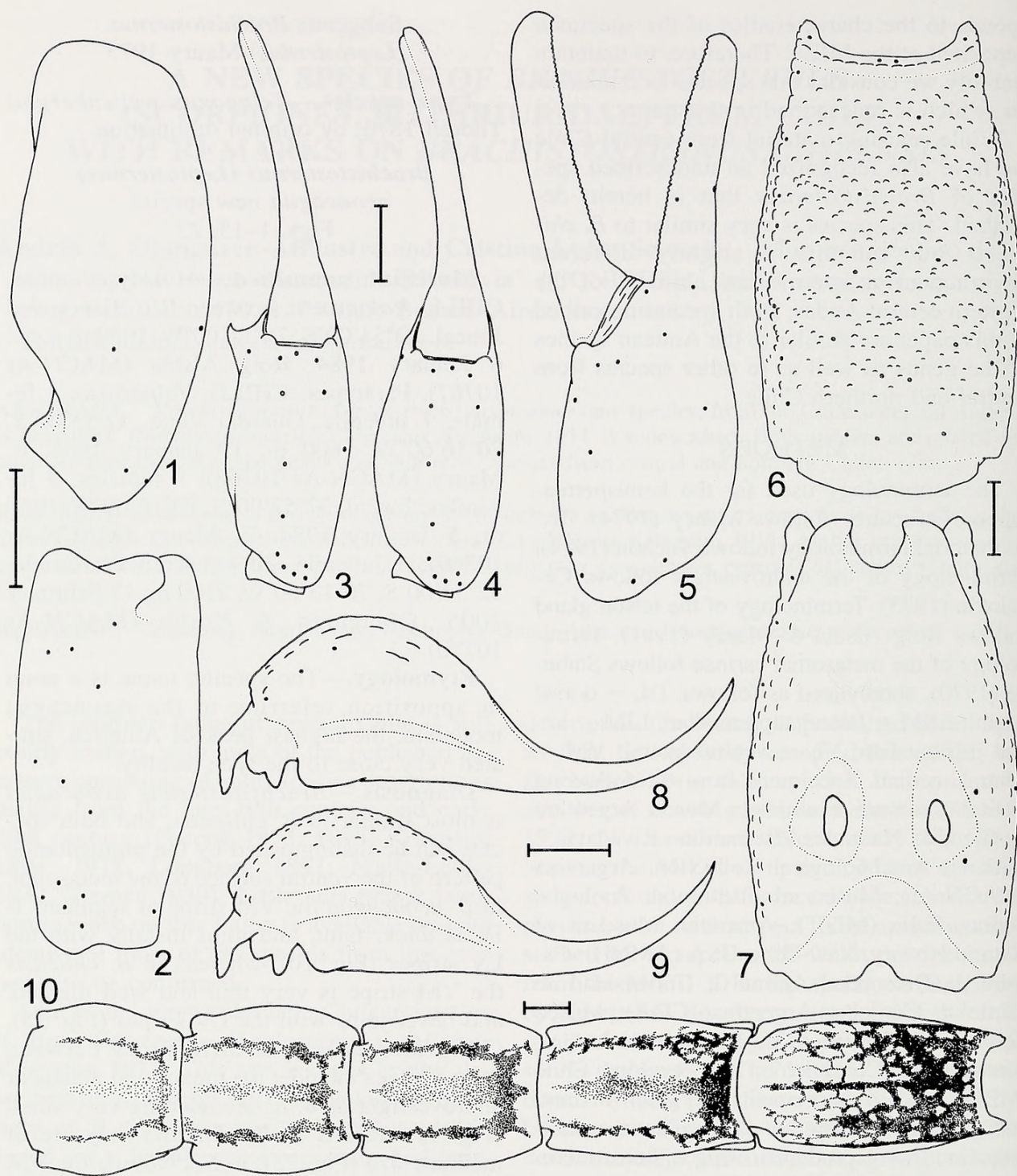
**Etymology.**—The specific name is a noun in apposition referring to the Aconcagua mountain, the highest peak of America, situated very close to the type locality.

**Diagnosis.**—*Brachistosternus aconcagua* is most similar to *B. chilensis*, and both species can be distinguished by the pigmentation pattern of the ventral surface of the metasoma: in *B. aconcagua* the VM stripe of segments I–IV is thick, faint, and joins distally with the LV stripes (Fig. 10), whereas in *B. chilensis* the VM stripe is very thin and well marked, and never joins with the LV stripes (Fig. 25). Other morphological differences between these species include: the metasomal glands or androvestigia of *B. aconcagua* are very small (Fig. 7) whereas in *B. chilensis* they are of medium size (Fig. 22); in *B. chilensis* the VM carinae of metasomal segment V extends almost the entire length of the segment, but is poorly developed (Fig. 21), whereas in *B. aconcagua* it is absent (Fig. 6).

*Brachistosternus* (L.) *aconcagua* is also similar to *B. negrei*. Both species can be easily distinguished because in *B. negrei* the VM stripe of metasomal segments I–IV is divided into 2 thin PM stripes (Fig. 26).

**Description.**—*Color*: general color dark yellow, with very dense dusky pattern. Carapace with front edge densely pigmented; ocular tubercle black, with a dark stripe from





Figures 1–10.—*Brachistosternus (Leptosternus) aconcagua* new species: 1. Left pedipalp patella, ventral aspect; 2. Left pedipalp patella, external aspect; 3. Left pedipalp chela, male, ventral aspect; 4. Left pedipalp chela, female, ventral aspect; 5. Left pedipalp chela, female, external aspect; 6. Fifth metasomal segment, male, ventral aspect; 7. Fifth metasomal segment, male, dorsal aspect; 8. Telson, female, lateral aspect; 9. Telson, male, lateral aspect; 10. Metasoma, pigmentation pattern, ventral aspect. Scale bars = 1 mm.

postocular furrow to lateral ocelli, leaving an anterior depigmented triangle that only in very pigmented specimens is pigmented; lateral surface with dark reticulated pigment; with 2 posterolateral dark spots. Tergites with

2 well developed lateral dark spots that leave an incomplete depigmented stripe between them; these lateral spots are joined only by a thin dark line on the posterior margin of segment. Pedipalps: femur and patella densely



Table 1.—Measurements (mm) of *Brachistosternus aconcagua* new species, male holotype (MACN-Ar 10767), and female paratype (MACN-Ar 10768), and *Brachistosternus chilensis*, male (MACN-Ar 10772) and female (MACN-Ar 10773).

	<i>Brachistosternus</i> (L.) <i>aconcagua</i>		<i>Brachistosternus</i> (L.) <i>chilensis</i>	
	Male holotype	Female paratype	Male	Female
Total length	43.20	57.12	49.33	53.36
Carapace, length	5.09	6.38	5.41	6.87
Carapace, anterior width	3.86	5.01	4.28	5.09
Carapace, posterior width	5.66	7.11	6.06	7.03
Mesosoma, total length	11.08	18.74	15.00	13.86
Metasoma, total length	27.03	32.00	22.62	25.12
Metasomal segment I, length	3.20	4.36	3.64	4.04
Metasomal segment I, width	3.80	4.68	4.12	4.68
Metasomal segment I, height	2.91	3.63	3.07	3.47
Metasomal segment II, length	3.80	4.85	4.04	4.52
Metasomal segment II, width	3.47	4.20	3.79	4.28
Metasomal segment II, height	2.91	3.72	3.07	3.47
Metasomal segment III, length	4.00	4.85	4.20	4.85
Metasomal segment III, width	3.23	4.04	3.64	4.12
Metasomal segment III, height	2.91	3.47	2.99	3.47
Metasomal segment IV, length	4.72	5.25	4.85	5.49
Metasomal segment IV, width	3.15	3.79	3.31	3.88
Metasomal segment IV, height	2.83	3.23	2.91	3.23
Metasomal segment V, length	5.25	6.06	5.89	6.22
Metasomal segment V, width	3.31	3.64	3.31	3.88
Metasomal segment V, height	2.67	2.99	2.5	2.91
Telson, length	6.06	6.63	6.3	7.51
Vesicle, length	3.55	3.63	3.23	3.88
Vesicle, width	2.18	2.50	2.18	2.58
Vesicle, height	2.02	2.18	1.86	2.34
Aculeus, length	2.51	2.99	3.07	3.63
Femur, length	4.36	4.44	3.88	4.28
Femur, width	1.21	1.21	1.05	1.45
Patella, length	4.04	4.44	3.88	4.12
Patella, width	1.54	1.94	1.54	1.78
Chela, length	7.27	7.99	6.86	7.67
Chela, width	1.61	1.94	1.77	1.94
Chela, height	2.18	2.42	2.26	2.66
Movable finger, length	4.28	4.68	4.12	4.36

pigmented, chela with longitudinal dark stripes on hand, and with a dark spot on base of movable finger, fingers depigmented. Legs: femur and patella densely pigmented. Metasoma: segments I–III: dorsally with median thin spot and 2 posterolateral dark spots, laterally with reticulate pigment near dorsal margin, ventrally with 2 lateral thin dark stripes, and median thick stripe faintly marked, these 3 stripes join on posterior third of segment (Fig. 10); segment IV similar to segments I–III but median ventral dark stripe is well marked; segment V: dorsal surface with 2 posterolateral dark spots poorly marked, lateral

surface like segments I–IV, ventral surface with 2 wide dark stripes and thin median stripe, connected in anterior half of segment by dense reticulated pigmentation, and join in posterior half of segment. Telson: vesicle faintly spotted on ventral surface, aculeus densely pigmented.

*Morphology:* measurements of male holotype, and female paratype in Table 1. Chelicerae with 2 subdistal teeth. Carapace: anterior margin with a well developed median bulge; anterior longitudinal sulcus deeply marked; tegument densely granulate in male holotype, smooth in females; ocular tubercle well



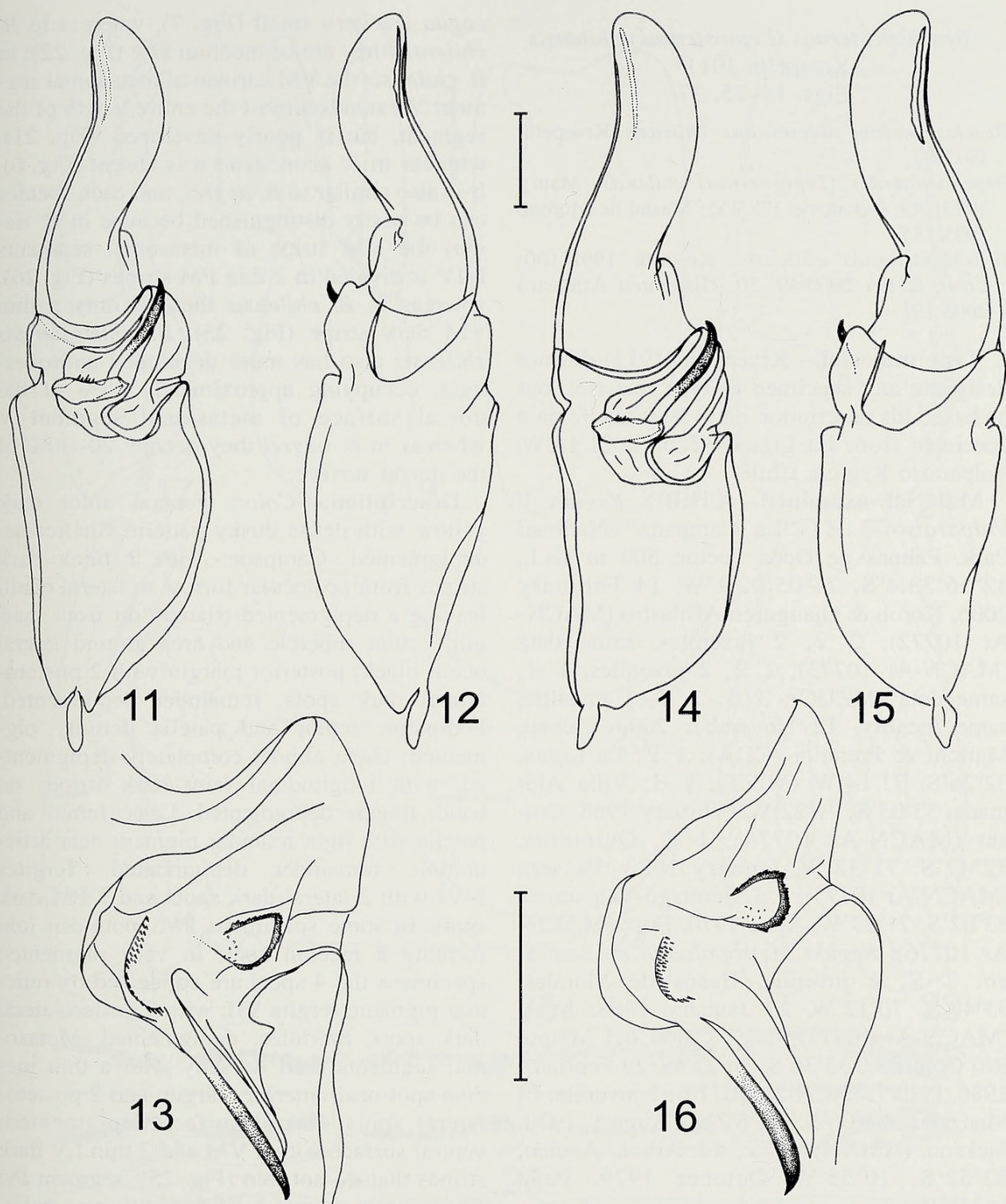
marked, slightly anterior to middle of carapace, interocular sulcus deeply marked, eyes 2 diameters apart, lateral sulcus, postocular furrow, and posterior sulcus deeply marked. Sternum: sternum type 2 (Soleglad & Fet 2003) much wider than long, apex width almost equal to posterior width, posterior emargination well developed, with convex lateral lobes conspicuously separated. Tergites I–VI with smooth tegument in anterior two-thirds, and slightly granulate in posterior third; tergite VII with granulate tegument and 2 posterolateral keels. Sternites: very granulate in males, smooth in females; spiracles long and narrow, placed in very conspicuous furrow. Metasoma: segments I–III: dorsal surface very granulate in male holotype, smooth in females, DL carinae extend entire length of segment but poorly developed; lateral surface granulate in male holotype, smooth in females, LIM and LSM carinae poorly developed, extending entire length of segment in male holotype, but only in posterior half of segment in females; ventral surface granulate in male holotype, smooth in females; segment IV: ventral surface smooth and covered by scattered setae, LIM and LSM carinae absent, others similar to segments I–III; segment V: dorsal and lateral surfaces granulate in male holotype, smooth in females, androvestigia poorly developed and occupy less than 20 % of dorsal surface of segment (Fig. 7), ventral surface densely granulate (Fig. 6); ventral setae usually comprising 5 or 6 rows, the first 2 rows with 4 or 5 setae, remainder with 1–3 setae; VL carinae well marked, extending entire length of segment, VM carina absent. Telson: vesicle with rounded ventral surface, tegument sparsely granulate; no evident telson gland in male; aculeus slightly curved, same length as vesicle (Figs. 8, 9). Pedipalps: trichobothrial pattern of subgenus *Leptosternus*, neobothriotaxic major type C (Figs. 1–5), adding 1 trichobothria on ventral series of chela; femur with 3 trichobothria: 1 *d*, 1 *i* and 1 *e*; patella with 19 trichobothria (Figs. 1, 2): 3 *V*, 2 *d*, 1 *i*, 3 *et*, 1 *est*, 2 *em*, 2 *esb*, and 5 *eb*; chela with 27 trichobothria (Figs. 3–5): 1 *Est*, 5 *Et*, 5 *V*, 1 *Esb*, 3 *Eb*, 1 *Dt*, 1 *Db*, 1 *et*, 1 *est*, 1 *esb*, 1 *eb*, 1 *dt*, 1 *dst*, 1 *dsb*, 1 *db*, 1 *ib*, 1 *it*; femur with DI, DE and VI carinae well marked, remainder of tegument smooth; patella: DI and VI carinae well marked in male holotype, absent in females, remainder of teg-

ument smooth; chela: narrow, with smooth tegument and VM carina well developed; fingers with a median row of teeth and 7–9 pairs of additional teeth, internal apophysis of male very well developed (Fig. 3). Legs: femur and patella with finely granulate tegument, and poorly developed carinae on ventral surface; telotarsal unguis approximately of same size on all legs. Hemispermaphore: distal lamina thick, slightly curved, almost of same size as basal portion (Figs. 11, 12); cylindrical apophysis well developed, longer than laminar apophysis; basal triangle well developed, formed by 3 crests; internal spines absent, basal spines and row of spines well developed and on same line (Fig. 13).

**Variability.**—Pedipalp chela length/height ratio, 3.3 (♂ holotype); 3.2–3.33 (♀, *n* = 4; mean = 3.28). Pedipalp chela length/width ratio: 4.3 (♂ holotype); 4.28–4.36 (♀, *n* = 4; mean = 4.31). Metasomal segment V length/width ratio, 1.56 (♂ holotype); 1.50–1.73 (♀, *n* = 4; mean = 1.61). Metasomal segment V, ventral setae: 13–15 (*n* = 10; median = 14). Metasomal segment V, lateroventral setae: 8–9 (*n* = 10; median = 8). Telotarsus III dorsal setae: 9–11 (*n* = 10; median = 11). Telotarsus I dorsal setae: 7–8 (*n* = 10; median = 7). Telotarsus I ventrointernal setae: 2–3 (*n* = 10; median = 2). Telotarsus I ventroexternal setae: 0 (*n* = 5; median = 0). Basitarsus I dorsal setae: 5–6 (*n* = 10; median = 6). Telotarsus II dorsal setae: 8–9 (*n* = 10; median = 9). Telotarsus II ventrointernal setae: 3–4 (*n* = 10; median = 4). Telotarsus II ventroexternal setae: 2–3 (*n* = 10; median = 3). Basitarsus II dorsal setae: 6–7 (*n* = 10; median = 6). Telotarsus III ventrointernal setae: 6–7 (*n* = 10; median = 6). Telotarsus III ventroexternal setae: 3–5 (*n* = 10; median = 3). Basitarsus III dorsal setae: 5–6 (*n* = 10; median = 6). Telotarsus IV dorsal setae: 4–5 (*n* = 10; median = 5). Telotarsus IV ventrointernal setae: 4–5 (*n* = 10; median = 5). Telotarsus IV ventroexternal setae: 3–5 (*n* = 10; median = 4). Basitarsus IV dorsal setae: 3–4 (*n* = 10; median = 3). Pectinal teeth: 34 and 36 (♂, *n* = 2), 28–31 (♀, *n* = 8; median = 31). Total length (mm): 43.2 (♂ holotype); 50.4–61.0 (♀, *n* = 4; median = 55.25).

**Distribution.**—*Brachistosternus aconcagua* has been collected within a small area of central Chile, in the Valparaíso Region (Fig. 27). All specimens were collected on the





Figures 11–16.—11–13. *Brachistosternus (Leptosternus) aconcagua* new species: 11. Left hemispermatophore, ventral aspect; 12. Left hemispermatophore, dorsal aspect; 13. Left hemispermatophore, detail of the lobe region. 14–16. *Brachistosternus (Leptosternus) chilensis* Kraepelin: 14. Left hemispermatophore, ventral aspect; 15. Left hemispermatophore, dorsal aspect; 16. Left hemispermatophore, detail of the lobe region. Scale bars = 1 mm.

western slopes of west Andes, at intermediate altitudes between 1600 and 2100 m a.s.l.; all these localities belong to the “Andes Mediterraneos” botanical subregion, placed in the

“Estepa altoandina” botanical region (Gajardo 1993).

**Ecology.**—*Brachistosternus aconcagua* has been collected in sympatry with *B. coriaceus*.



*Brachistosternus (Leptosternus) chilensis*  
Kraepelin 1911  
Figs. 14–25, 27

*Brachistosternus intermedius chilensis* Kraepelin 1911:87.

*Brachistosternus (Leptosternus) chilensis*: Maury 1973:249; Cekalovic 1983:55; Masnú de Moreno 1991:185.

*Brachistosternus chilensis*: Kovařík 1998:100; Lowe & Fet 2000:49, 50; Ojanguren Affilastro 2005:191.

**Type material.**—Kraepelin (1911) did not designate any specimen as type material, but he based his description on at least one female specimen from La Ligua, 32°26'S, 71°14'W, Valparaíso Region, Chile.

**Material examined.**—CHILE: *Region V Valparaíso*: 1 ♂, “La Campana” National Park, Palmas de Ocoa Sector, 500 m a.s.l., 32°56'33.4"S, 71°05'02.1"W, 14 February 2005, Korob & Ojanguren Affilastro (MACN-Ar 10772); 2 ♀, 2 juveniles, same data (MACN-Ar 10773); 2 ♀, 2 juveniles, 1 ♂, same data (MZUC); 3 ♂, 2 ♀, 1 juvenile, same locality, 12 November 2003, Ochoa, Mattoni & Prendini (CDA); 1 ♀, La Ligua, 32°26'S, 71°14'W (MIZT); 1 ♂, Villa Alemana, 33°03'S, 71°22'W, February 1968, Cruzat (MACN-Ar 10774); 1 ♂, Quinteros, 32°47'S, 71°32'W, January 1983, Passera (MACN-Ar 10775); 1 ♂, Santiago-Valparaíso, 33°02'S, 71°27'W, April 1970, Fritz (MACN-Ar 10776); *Región Metropolitana de Santiago*: 2 ♀, 1 juvenile, Baños de Morales, 33°49'S, 70°12'W, 29 January 1968, Mesa (MACN-Ar 10777); 1 ♂, Cajón del Maipo, Río Colorado, 33°36'S, 70°22'W, 29 February 1986, Peña (MACN-Ar 10778); 1 juvenile, El Manzano, 34°06'S, 71°51'W, August 1970, Jackson (AMNH); 1 ♀, El Arbol, Aculeo, 33°52'S, 70°55'W, October 1979, Peña (AMNH).

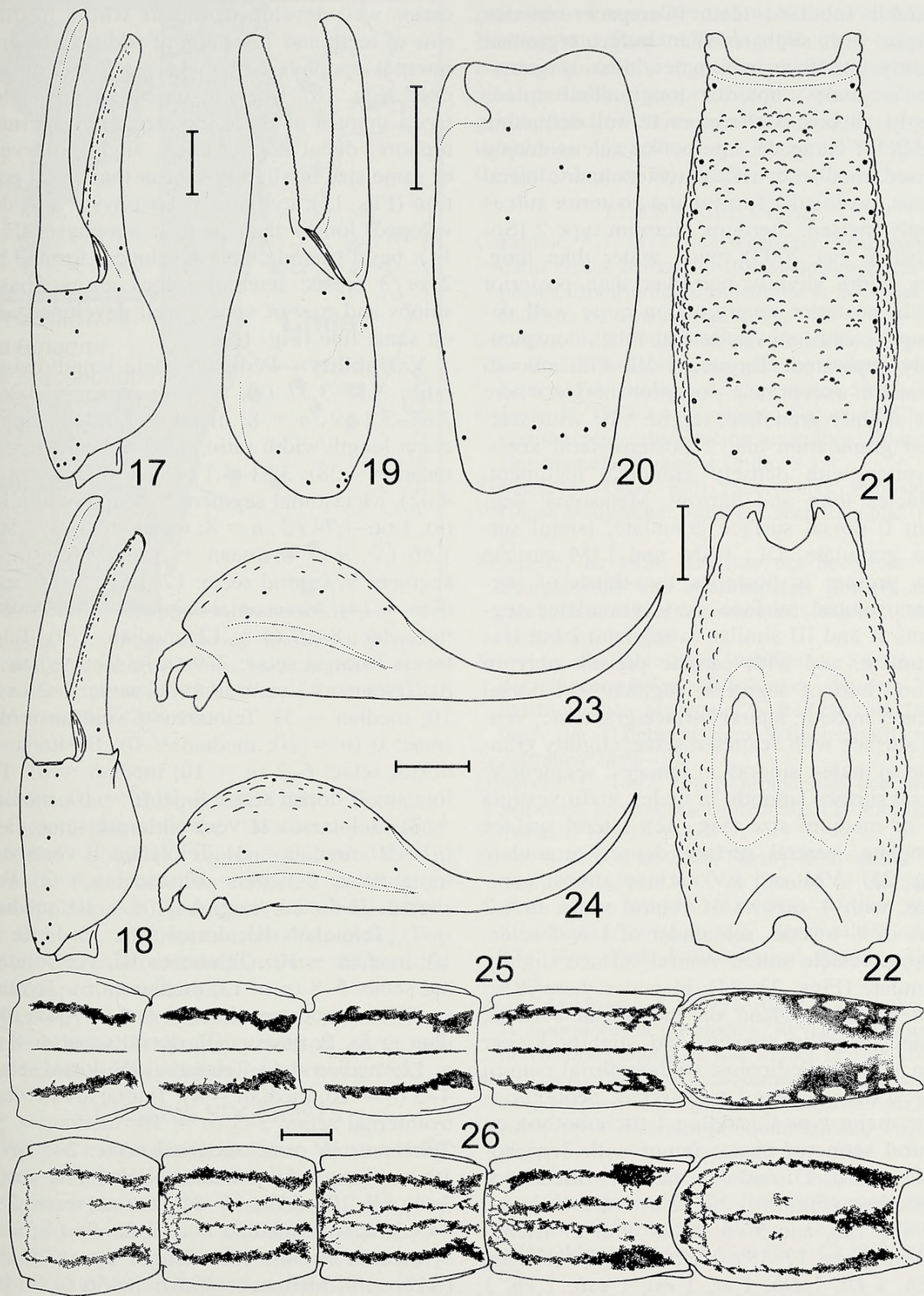
**Diagnosis.**—This species is similar to *B. aconcagua*, and each can be distinguished by the pigmentation pattern of the ventral surface of the metasoma; in *B. aconcagua* the VM stripe of segments I–IV is thick, faint, and joins distally with the LV stripes (Fig. 10), whereas in *B. chilensis* the VM stripe is very thin and well marked, and never joins with the LV stripes (Fig. 25). Other morphological differences between these species include: metasomal glands or androvestigia of *B. acon-*

*cagua* are very small (Fig. 7), whereas in *B. chilensis* they are of medium size (Fig. 22); in *B. chilensis* the VM carinae of metasomal segment V extends almost the entire length of the segment, but is poorly developed (Fig. 21), whereas in *B. aconcagua* it is absent (Fig. 6). It is also similar to *B. negrei*, and each species can be easily distinguished because in *B. negrei* the VM stripe of metasomal segments I–IV is divided in 2 thin PM stripes (Fig. 26), whereas in *B. chilensis* there is only a thin VM dark stripe (Fig. 25). *Brachistosternus chilensis* also has more developed androvestigia, occupying approximately 50% of the dorsal surface of metasomal segment V whereas in *B. negrei* they occupy 20–30% of the dorsal surface.

**Description.**—*Color*: general color dark yellow with dense dusky pattern. Chelicerae: depigmented. Carapace: with 2 thick dark stripes from postocular furrow to lateral ocelli leaving a depigmented triangle on front margin; ocular tubercle and area around lateral ocelli black; posterior margin with 2 posterolateral dark spots, remainder depigmented. Pedipalps: femur and patella densely pigmented; chela almost completely depigmented, with longitudinal faint dark stripes on hand, fingers depigmented. Legs: femur and patella with light reticular pigment near articulation, remainder depigmented. Tergites I–VI with 2 lateral dark spots and 2 PM dark spots, in some specimens PM spots can join forming a median spot; in very pigmented specimens the 4 spots are connected by reticular pigment; tergite VII: with 2 posterolateral dark spots. Sternites: depigmented. Metasoma: segments I–III dorsally with a thin median spot near anterior margin, and 2 posterolateral spots; lateral surface depigmented; ventral surface with a VM and 2 thin LV dark stripes that do not join (Fig. 25); segment IV: similar to segments I–III but with posterolateral dorsal dark spots faintly marked; segment V: dorsal and lateral surfaces depigmented; ventral surface with VM thin dark stripe and 2 LV thick stripes that in most specimens do not join, only in most pigmented specimens they join in posterior margin of segment. Telson: vesicle faintly pigmented on ventral surface; aculeus dark brown.

**Morphology**: measurements of a male (MACN-Ar 10772) and a female (MACN-Ar 10773) specimen in Table 1. Chelicerae: with





Figures 17–26.—17–25. *Brachistosternus (Leptosternus) chilensis* Kraepelin: 17. Right pedipalp chela, female, ventral aspect; 18. Right pedipalp chela, male, ventral aspect; 19. Right pedipalp chela, female, external aspect; 20. Right pedipalp patella, external aspect; 21. Fifth metasomal segment, male, ventral aspect; 22. Fifth metasomal segment, male, dorsal aspect; 23. Telson, female, lateral aspect; 24. Telson, male, lateral aspect; 25. Metasoma, pigmentation pattern, ventral aspect. 26. *Brachistosternus (Leptosternus) negrei* Cekalovic: Metasoma, pigmentation pattern, ventral aspect. Scale bars = 1 mm.



2 small subdistal teeth. Carapace: anterior margin with slight median bulge; tegument slightly granulate in females, densely granulate in males; anterior longitudinal sulcus deeply marked; ocular tubercle well defined in middle of carapace, interocular sulcus deeply incised, median eyes 2 diameters apart; lateral sulcus, postocular furrow and posterior sulcus deeply incised. Sternum: sternum type 2 (Soleglad & Fet 2003) much wider than long, apex width slightly narrower than posterior width, posterior emargination quite well developed, with convex lateral lobes conspicuously separated. Tergites I–VI with smooth tegument, except near posterior margin where it is slightly granulate; tergite VII: with scattered granulation and 2 posterolateral keels. Sternites with densely granulate tegument; spiracles long and narrow. Metasoma: segment I: dorsal surface granulate; lateral surface granulate, DL, LSM and LIM carinae only present in posterior two-thirds of segment; ventral surface very granulate; segments II and III similar to segment I but less granulate, and with carinae present only in second half of segment; segment IV: dorsal surface smooth; lateral surface granulate; ventral surface with scattered setae, slightly granulate in males, smooth in females; segment V: dorsal surface smooth; in males, androvestigia are of medium size (Fig. 22); lateral surface granulate; ventral surface densely granulate (Fig. 21), VM and LV carinae almost complete, with 4–6 rows of ventral setae, first 2 rows of 4–6 setae, remainder of 1 or 2 setae. Telson: vesicle small, ventral surface slightly granulate (Figs. 23, 24); in males there is no evident telson gland on the dorsal surface; aculeus slightly curved, and slightly longer than vesicle. Pedipalps: trichobothrial pattern typical of subgenus *Leptosternus*, neobothriotaxic major type C, adding 1 trichobothria on ventral series of chela; femur with 3 trichobothria: 1 *d*, 1 *i* and 1 *e*; patella with 19 trichobothria (Fig. 20): 3 *V*, 2 *d*, 1 *i*, 3 *et*, 1 *est*, 2 *em*, 2 *esb*, and 5 *eb*; chela with 27 trichobothria (Figs. 17–19): 1 *Est*, 5 *Et*, 5 *V*, 1 *Esb*, 3 *Eb*, 1 *Dt*, 1 *Db*, 1 *et*, 1 *est*, 1 *esb*, 1 *eb*, 1 *dt*, 1 *dst*, 1 *dsb*, 1 *db*, 1 *ib*, 1 *it*; femur with DI, DE and VI carinae well marked, remainder of tegument smooth, patella: DI and VI carinae well marked in male holotype, absent in females, remainder of tegument smooth; chela: narrow, with smooth tegument and VM

carina well developed; fingers with a median row of teeth and 7–9 pairs of additional teeth, internal apophysis of male very well developed (Fig. 18). Legs: tegument smooth; telotarsal ungues of the same size. Hemispermatophore: distal lamina thick, slightly curved, of same size or slightly shorter than basal portion (Fig. 15); cylindrical apophysis well developed, longer than laminar apophysis (Fig. 14); basal triangle well developed, formed by 2 or 3 crests; internal spines absent, basal spines and row of spines well developed and on same line (Fig. 16).

**Variability.**—Pedipalp chela length/height ratio, 3.15–3.37 ( $\delta$ ,  $n = 8$ ; mean = 3.26); 2.87–3.2 ( $\varphi$ ,  $n = 8$ ; mean = 3.02). Pedipalp chela length/width ratio, 4.06–4.4 ( $\delta$ ,  $n = 8$ ; mean = 4.28); 3.81–4.17 ( $\varphi$ ,  $n = 8$ ; mean = 4.02). Metasomal segment V, length/width ratio, 1.66–1.74 ( $\delta$ ,  $n = 8$ ; mean = 1.68); 1.56–1.66 ( $\varphi$ ,  $n = 8$ ; mean = 1.59). Metasomal segment V, ventral setae: 12–17 ( $n = 10$ ; median = 14). Metasomal segment V, lateroventral setae: 8–10 ( $n = 12$ ; median = 9). Telotarsus I dorsal setae: 7–9 ( $n = 10$ ; median = 8). Telotarsus I ventrointernal setae: 1–3 ( $n = 10$ ; median = 3). Telotarsus I ventroexternal setae: 0 ( $n = 10$ ; median = 0). Basitarsus I dorsal setae: 6–7 ( $n = 10$ ; median = 6). Telotarsus II dorsal setae: 8–10 ( $n = 10$ ; median = 8). Telotarsus II ventrointernal setae: 3–5 ( $n = 10$ ; median = 4). Telotarsus II ventroexternal setae: 2–3 ( $n = 10$ ; median = 2). Basitarsus II dorsal setae: 6–7 ( $n = 10$ ; median = 7). Telotarsus III, dorsal setae: 8–11 ( $n = 10$ ; median = 10). Telotarsus III, ventrointernal setae: 5–8 ( $n = 12$ ; median = 6). Telotarsus III, ventroexternal setae: 4–6 ( $n = 12$ ; median = 5). Basitarsus III, dorsal setae: 6–8 ( $n = 12$ ; median = 6). Telotarsus IV dorsal setae: 4–5 ( $n = 10$ ; median = 4). Telotarsus IV ventrointernal setae: 3–5 ( $n = 10$ ; median = 5). Telotarsus IV ventroexternal setae: 2–5 ( $n = 10$ ; median = 5). Basitarsus IV dorsal setae: 3–4 ( $n = 10$ ; median = 3). Pectinal teeth: 28–34 ( $\delta$ ,  $n = 8$ ; median = 33), 28–34 ( $\varphi$ ,  $n = 9$ ; median = 30). Total length (mm): 43–59 ( $\delta$ ,  $n = 9$ ; median = 49.6); 48–56 ( $n = 10$ ; median = 51.5).

**Distribution.**—*Brachistosternus chilensis* occurs in Region V Valparaíso and in Region Metropolitana, de Santiago, Chile, from sea level to 1000 m a.s.l. (Fig. 27); all of the localities where this species has been collected



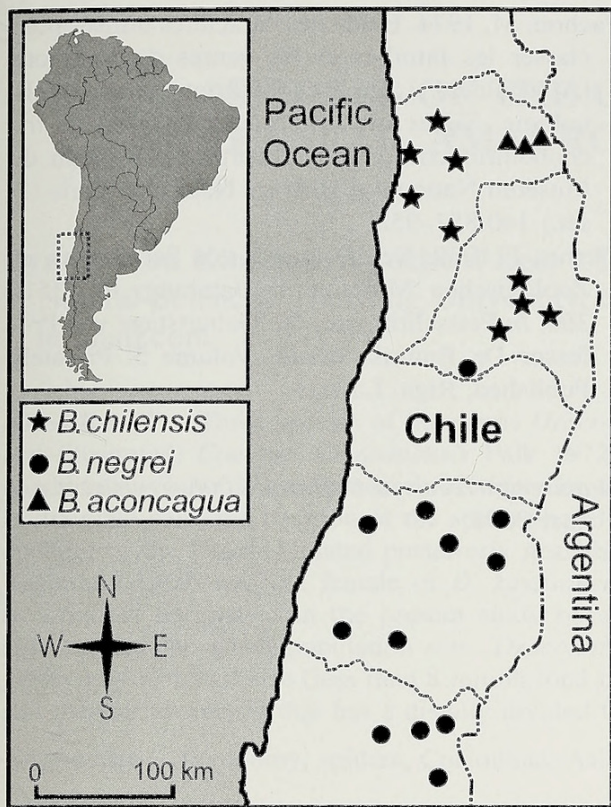


Figure 27.—Map showing known distribution records of *Brachistosternus* (*Leptosternus*) *aconcagua* new species, *B. (L.) chilensis* Kraepelin, and *B. (L.) negrei* Cekalovic.

belong to the “Bosque Esclerófilo” botanical subregion, placed in the “Matorral y Bosque Xerófilo” botanical region (Gajardo 1993). Some of the specimens collected at “Region Metropolitana de Santiago,” are subtly different from the specimens from Valparaíso, but we have decided to consider these differences as intraspecific variation.

**Ecology.**—*Brachistosternus chilensis* has been collected in sympatry with *B. coriaceus* and *Caraboctonus keyserlingi* Pocock 1893.

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