



## Two new species of the ladybird beetle *Hong* Ślipiński from Chile (Coleoptera: Coccinellidae: Microweiseinae)

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### Abstract

The ladybird beetle genus *Hong* Ślipiński was previously known from a single female specimen from a subtropical forest in South East Queensland, Australia. *Hong guerreroi* **sp. nov.** and *H. slipinskii* **sp. nov.** from a temperate forests of Central and Southern Chile are described and illustrated. A key for the species of the genus and complementary characters, including the first description of males, are provided.

**Key words:** taxonomy, biogeography, south temperate forest

### Resumen

El género de coccinélidos Ślipiński *Hong* era previamente conocido de un único ejemplar hembra procedente del bosque subtropical del sudeste de Queensland, Australia. Las especies *H. guerreroi* **sp. nov.** y *H. slipinskii* **sp. nov.** son descritas e ilustradas y están distribuidas en los bosques templados del centro y sur de Chile. Se incluye una clave para las especies de *Hong* junto a características adicionales, incluyendo la primera descripción de machos del género.

### Introduction

The Microweiseinae are minute scale predator ladybirds, and comprise a sister taxon to the remaining Coccinellidae (Seago *et al.*, 2011). In Australia this subfamily is represented by the genus *Hong* Ślipiński, 2007 (type species *H. glorious* Ślipiński, 2007) based on a unique female specimen collected from a patch of subtropical forest in South East Queensland (Ślipiński, 2007).

Escalona & Ślipiński (2012) completed a generic revision and phylogeny of the Microweiseinae. In their analysis, the genus *Hong* formed a clade with the South African genus *Cathedrana* collected in *Podocarpus* forest. Both genera were included in Microweiseini and share the following characters: rostrate head, long maxillary palps, antenna composed of 10 antennomeres, poorly developed prosternal chin-piece that does not cover mouthparts in repose, raised prosternal process, and abdomen of 5 ventrites with postcoxal lines angulate and bordered with coarse punctures.

Research on ladybird beetles from Chile led to the discovery of specimens belonging to Microweiseini *sensu* Escalona & Ślipiński (2012). The general features of the newly discovered species fit well within the genus *Hong*, sharing a suite of unique diagnostic characters such as the antennal club composed of 3 antennomeres, prosternal chin-piece shelf-like, and tarsi cryptotetramerous (4–4–4).

The biogeographical distribution of the genus *Hong* is another example of the well-documented common relationships between the Australian and Chilean insect faunas, including examples from Ephemeroptera, Plecoptera, Orthoptera, Mecoptera, Trichoptera, Odonata, Diptera and Coleoptera (Peña 1988). Examples of Coleoptera with Southern South American and Australian or New Zealandic distributions are also common (e. g. Newton 1985, Elgueta 2000, Kuschel 2000, Arias 2000, Ślipiński & Lawrence 1997, Tomaszewska & Ślipiński 1995, Ślipiński & Tomaszewska 2010, Arias *et al.* 2009, Thomas 2010, Ruta *et al.* 2011).

## Material and methods

The specimens examined were deposited in the following collections:

ANIC	Australian National Insect Collection, Canberra, Australia.
CAL	Collection Alfredo Lüer, Santiago, Chile
CAS	California Academy of Sciences, California, USA.
CMG	Collection Marcelo Guerrero, Santiago, Chile.
CPG	Collection Pedro Vidal, Santiago, Chile
MNHN	Museo Nacional de Historia Natural, Santiago, Chile.

Specimens were completely or partially disarticulated, KOH (10%) was used to digest muscular and other internal tissues. The images were made with a JCV and Kodak cameras attached to microscopes. Dissected specimens were cleaned with H<sub>2</sub>O and ethanol 90%, and some specimens were gold coated for SEM (Zeiss EvoLS15, CSIRO). Combine ZP, Adobe Photoshop and Paint Shop Pro were used to process images. The morphological terms follow Ślipiński (2007) and Lawrence *et al.* (2011).

## Taxonomy

### *Hong* Ślipiński

*Hong* Ślipiński, 2007: 50. Type species *Hong glorious* Ślipiński, 2007 (by original designation). Escalona & Ślipiński (2012).

**Diagnosis.** Rostrate head, long maxillary palps, antennae composed of 10 antennomeres with club of 3 antennomeres, poorly-developed shelf-like prosternal chin-piece that does not cover mouthparts in repose, raised prosternal process, well-developed prosternal and procoxal rest (Lawrence *et al.* 2011), pronotal anterior angles without marginal lines and lateral edges mostly smooth, raised mesoventral process, body without excavations for legs in repose, abdomen of 5 ventrites with postcoxal lines angulate and bordered with coarse punctures, and cryptotetramerous tarsi (4–4–4). Male genitalia, (unknown for *Hong glorious*): tegmen asymmetrical (Figs. 1G, 2H), parameres broad with rounded apex, penis guide narrow to apex (Fig. 1G), penis near basal fourth curved with apex straight to acute (Fig. 1I), and penis capsule slightly broader than penis (Figs. 1K, 2L).

**Comments.** *Hong* has been described, diagnosed and fully illustrated (Ślipiński 2007, Escalona & Ślipiński 2012), it is the only genus of ladybirds restricted to Chile and Australia.

### Key for the species of *Hong*

1. Pronotum and elytra with very coarse confluent punctures. Pronotal sides finely and barely crenulate, posterior angles obtuse. Australia ..... *Hong glorious* Ślipiński
- Pronotum and elytra with fine to coarse, well-separated punctures. Pronotal sides mostly smooth (Fig. 3D), posterior angles acute. Chile ..... 2
2. Elytral disc with a broad black shield-like spot (Fig. 1A). Pronotum densely punctate, punctures separated by about a puncture diameter (Fig. 1P). Parameres half length of penis guide (Figs. 1G–H) ..... *Hong guerreroi* sp. nov.
- Elytral disc with an irregular dark reddish spot (Fig. 2A). Pronotum finely punctate, punctures separated by more than a puncture diameter (Fig. 2P). Parameres as long as penis guide (Figs. 2H–I) ..... *Hong slipinskii* sp. nov.

### *Hong guerreroi* sp. nov.

(Figs. 1, 5)

**Holotype**, male, CHILE, [Provincia] Cauquenes, Res. Nac. [Reserva Nacional] Los Ruiles, 8–i–2002, [leg.] M. Guerrero (MNHN). *Paratypes*, 5 specimens: 1 same data as holotype (male, ANIC); 1 same data as holotype (CPV); 2 same data as holotype but 17–i–2002 (CPMG, MNHN); 1 same data as holotype but 22–i–2003, (dissected on slide, male, ANIC).

**Diagnosis.** Pronotum densely punctate, punctures separated by about a puncture diameter (Fig. 1P). Parameres half length of penis guide (Figs. 1G–H)

**Description.** Length: 1.3 mm, width: 0.7 mm. Color light reddish-brown, elytral disc with a broad shield-like black spot. Dorsal surface with decumbent fine long setae mixed with short setae, and covered with coarse punctures (Figs. 1A–B). Head elongate, flattened in lateral view, about 1.5 times as long as wide; dorsal surface smooth and polished with coarse punctures separated by less than a puncture diameter near and between eyes. Eyes prominent, reduced to about 50 coarse facets; interocular distance about 4.0 times eye transverse diameter; temple (Lawrence *et al.* 2011) about 1.5 times eye length. Maxillary palpomere 4 about 3.0 times longer than palpomere 3. Pronotum (Figs. 1A–B) transverse, 0.6 times as long as wide, widest at base; posterior angles acute; surface polished, disc densely punctate, punctures smaller than elytral ones, separated by about 1.0 puncture diameter; hypomeron with scarce punctures. Scutellum shield-like. Metaventral disc with coarse punctures. Elytral surface polished with coarse and irregular punctures, separated by about 1.0 puncture diameter, punctures bigger than the pronotal ones (fig. 1Q). Tarsi cryptotetramerous. Abdominal ventrite 1 about as long as ventrites 2–4, with fine punctures on disc (Fig. 1L); ventrites 2–5 with punctures scarce at sides; ventrite 5 apex slightly truncate. Male genitalia with parameres small, about half length of penis guide and rounded to apex, apex setose; penis guide (Figs. 1G–H) narrow to apex, in lateral view triangular. Penis (Figs. 1I–K) long and thin, bent at basal fourth then straight, apex acute, capsule very short, about as long as wide.

*Female:* Abdominal ventrite 5 with rounded apex (Fig. 1L). Genitalia with coxites elongate, about 5 times as long as wide, styli terminal. Spermatheca bicameral (Figs. 1O) with oval accessory gland and without infundibulum.

**Etymology.** Named after Marcelo Guerrero (Chile), enthusiastic entomologist and friend who has published landmark papers on Chilean beetles, and is the collector of the type series.

*Distribution:* Chile, Cauquenes Province (36S) (Fig. 5).

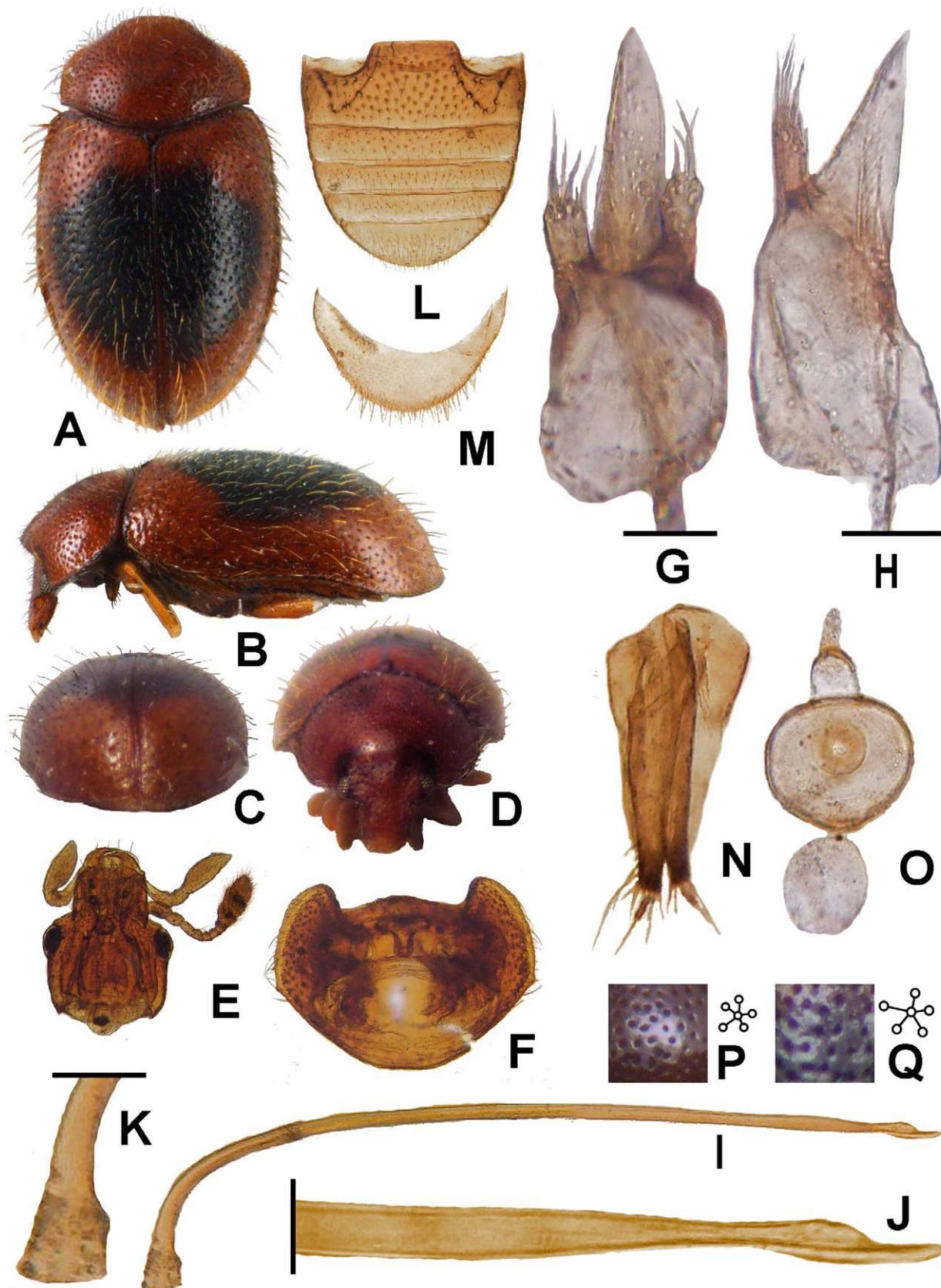
### ***Hong slipinski* sp. nov.**

(Figs. 2, 3, 4, 5)

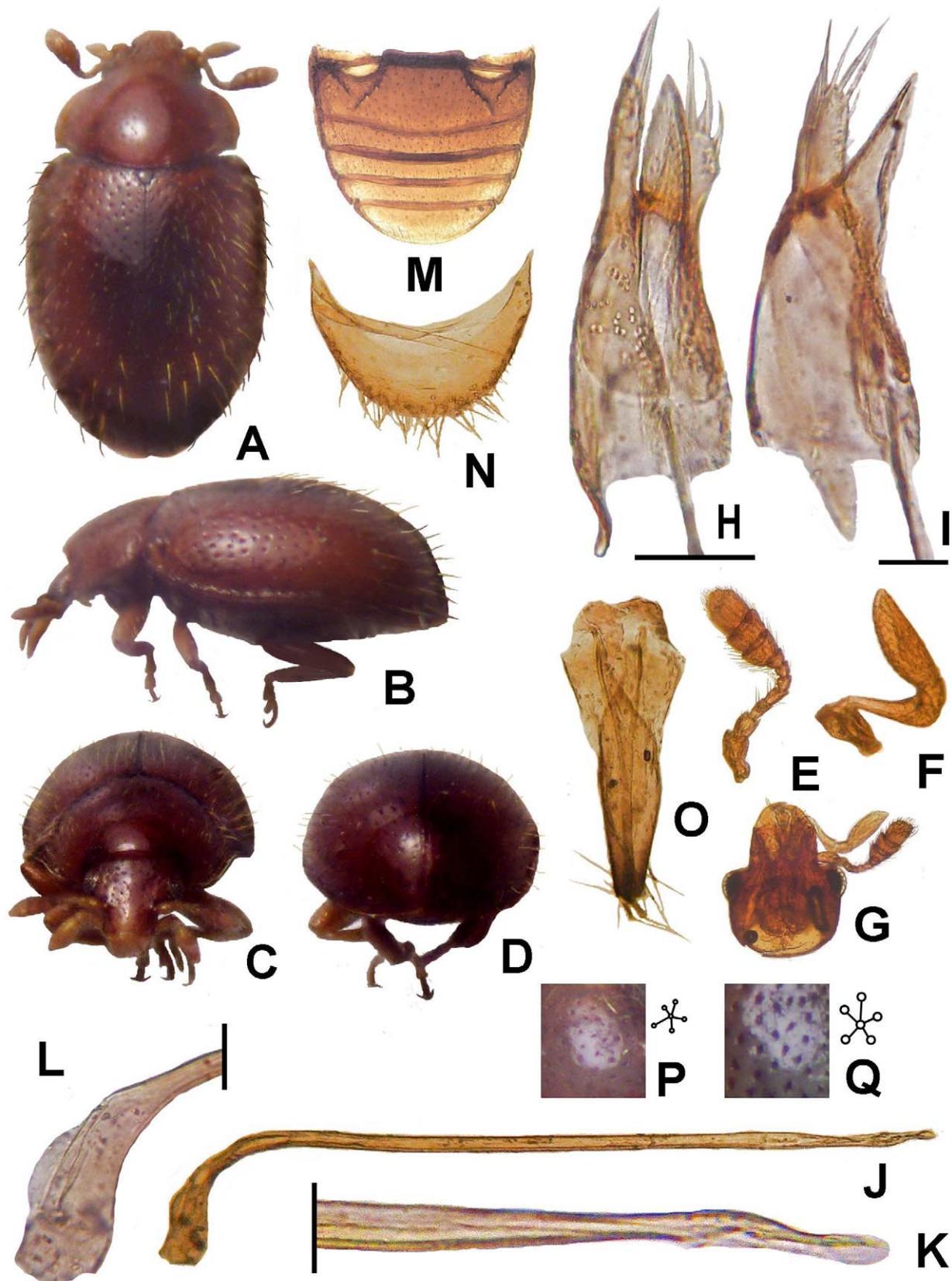
*Holotype*, male, CHILE, Prov. [Provincia] Concepción, El Manzano, 17–x–1996, leg. T. Cekalovic [MNHN]. *Paratypes*, 2 specimens. CHILE: VI R. [Región de O'Higgins], Nancagua, C. [Cerro] Rucatalca, 30–i–2011 [leg. A. Lüer] (CPAL). [Provincia] Malleco, 10 Mi N. of Perquenco, 6–i–[19]51 / Forested swampy brook, Ross & Michelbacher collectors (dissected for SEM, CAS).

**Diagnosis.** Pronotum finely punctate, punctures separated by more than a puncture diameter (Fig 2P). Parameres as long as penis guide (Figs. 2H–I).

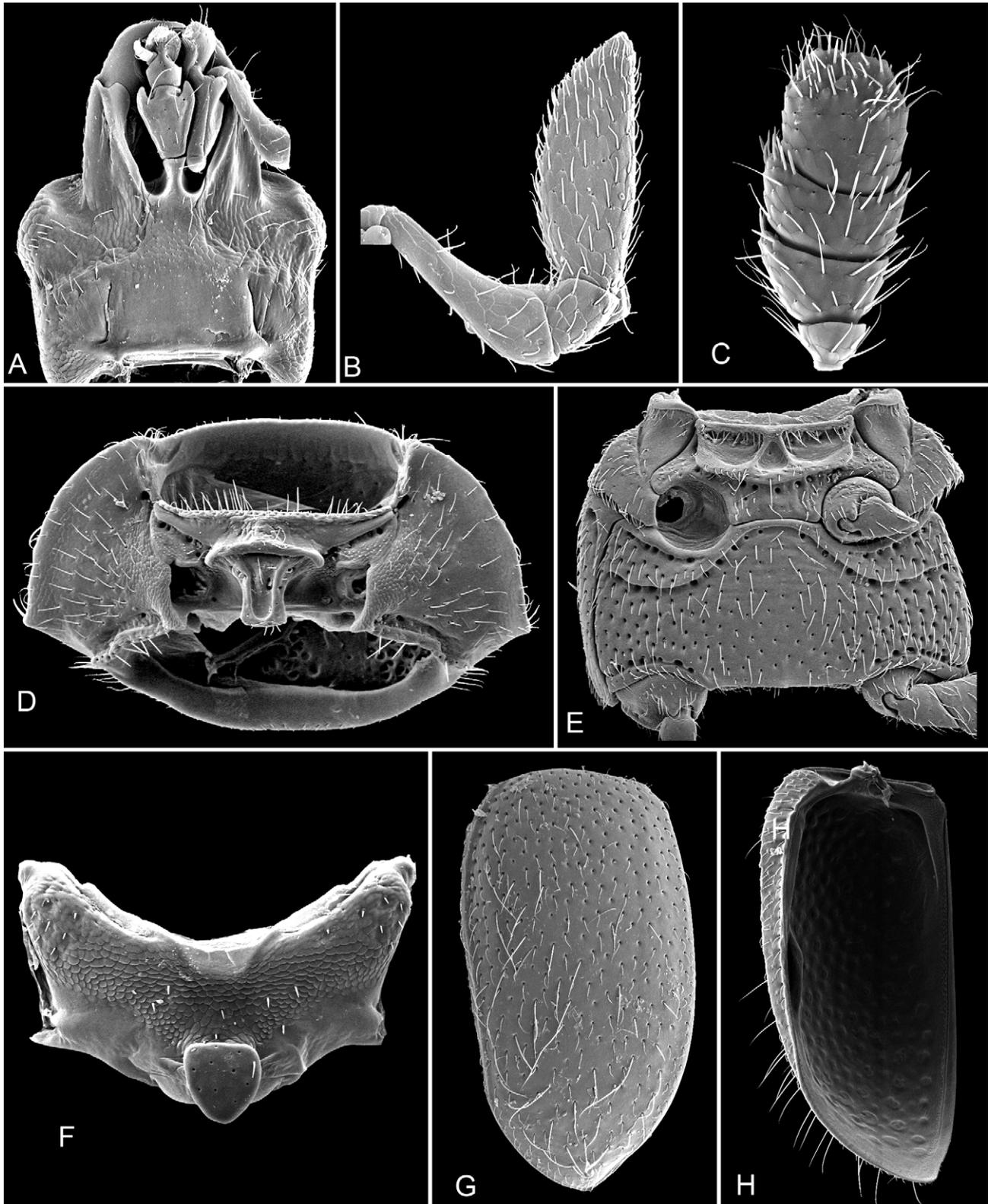
**Description.** Length: 1.1 mm, width: 0.6 mm. Color reddish-brown, elytral disc with diffuse circular dark reddish spot; dorsal surface clothed with long, sparse and decumbent setae mixed with short setae; punctures fine on pronotum and coarse on elytra (Fig. 2A). Head elongate, flattened in lateral view, 1.5 times as long as wide; dorsal surface polished with coarse punctures separated by about 1.0 puncture diameter, smaller and sparse near labrum. Eyes prominent, reduced to about 50 coarse facets; interocular distance about 4.0 times eye transverse diameter; temple (Lawrence *et al.* 2011) about 1.5 times eye length (Figs. 2G, 3A). Maxillary palpomere 4 about 3.0 times longer than 3. Pronotum transverse, 0.5 times as long as wide, widest at base; posterior angles acute, lateral edges mostly smooth; surface polished, disc finely punctate, punctures smaller than on elytra and separated by about 1.5–2.0 times a puncture diameter (Figs. 2P, 3C); hypomeron with few punctures (Fig. 3D). Scutellum shield-like (Fig. 3F). Elytral surface polished with coarse punctures, separated by about 1.0–1.5 diameters, punctures bigger than pronotal ones (Figs. 2Q, 3G–H). Metaventral disc with fine punctures, postcoxal lines



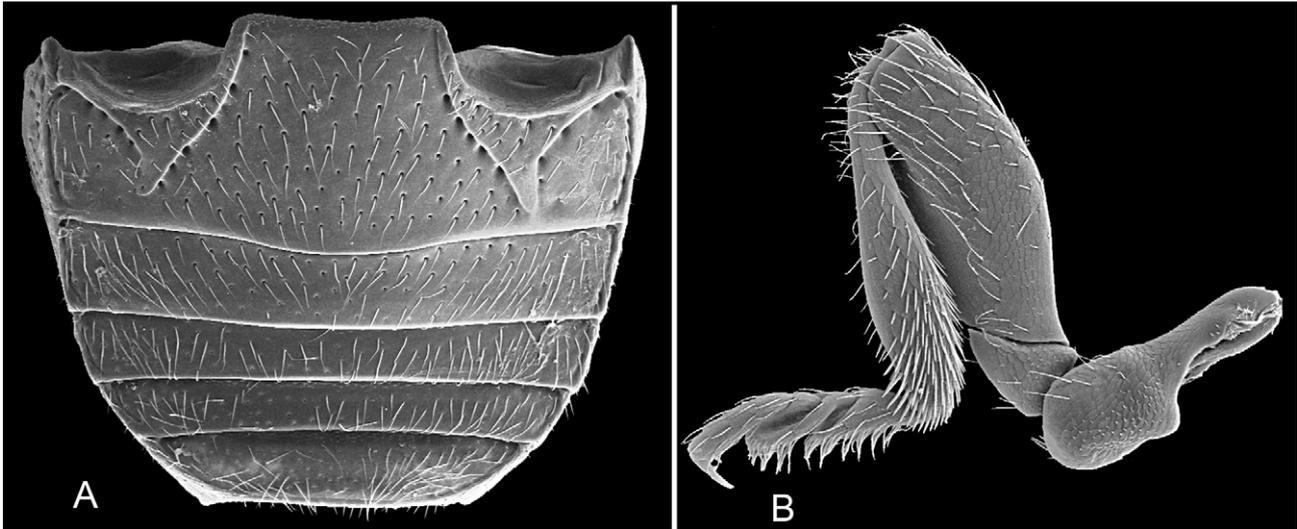
**FIGURE 1.** *Hong guerreroi* sp. nov.: (A–B) Habitus: (A) dorsal, (B) lateral; (C) posterior view and (D) frontal view. (E) Head, dorsal. (F) Prothorax, ventral. (G–K) Male genitalia: (G–H) Tegmen, dorsal and lateral view respectively, (I) Penis, (J) Penis apex, (K) Penis capsule. (L) Abdomen. (M–O) Female terminalia: (M) Sternite 8 (S8), (N) Coxites, (O) Spermatheca. (P) Pronotum, detail. (Q) Elytron, detail.



**FIGURE 2.** *Hong slipinskii* sp. nov.: (A–B) Habitus: (A) dorsal, (B) lateral; (C) frontal view and (D) posterior view. (E) Antenna. (F) Maxillary palp. (G) Head, ventral. (H–L) Male genitalia: (H–I) Tegmen, ventral and lateral view respectively, (J) Penis, (K) Penis apex, (L) Penis capsule. (M) Abdomen. (N–O): Female terminalia: (N) Sternite 8 (S8), (O) Coxites. (P) Pronotum detail. (Q) Elytron, detail.



**FIGURE 3.** *Hong slipinskii* sp. nov.: (A) head ventral view, (B) Maxillary palp, (C) Antennal club, (D) Prothorax ventral view, (E) Meso and metaventrite, (F) Scutellum, (G–H) Elytron, dorsal and ventral view respectively.



**FIGURE 4.** *Hong slipinskii* sp. nov.: (A) Abdomen, (B) Anterior leg.

margined with coarse punctures (Figs. 2M, 3E). Tarsi cryptotetramerous (Fig. 4B). Abdominal ventrite 1 about as long as ventrites 2–4, postcoxal lines margined with punctures; ventrites 2–5 with fine punctures on disc, ventrite 5 with apex broadly rounded (Fig. 4A). Male genitalia: parameres elongate and rounded to apex, almost as long as penis guide, apex setose; penis guide narrowing to apex, in lateral view triangular (Figs. 2I). Penis long and thin, bent at basal fourth then straight with pointed apex; capsule short, about two times as long as wide (Figs. 2J–L).

*Female:* Abdominal ventrite 5 with rounded apex. Genitalia with coxites elongate (Fig. 2O), about 5 times as long as wide, styli terminal. Spermatheca not examined.

**Etymology.** Named after Adam Ślipiński (CSIRO, ANIC), friend and tireless coleopterist, for his contribution to the knowledge of the world Coccinellidae.

**Distribution.** Chile, Colchagua, Concepción and Malleco Provinces, from 34°S to 39°S (Fig. 5).

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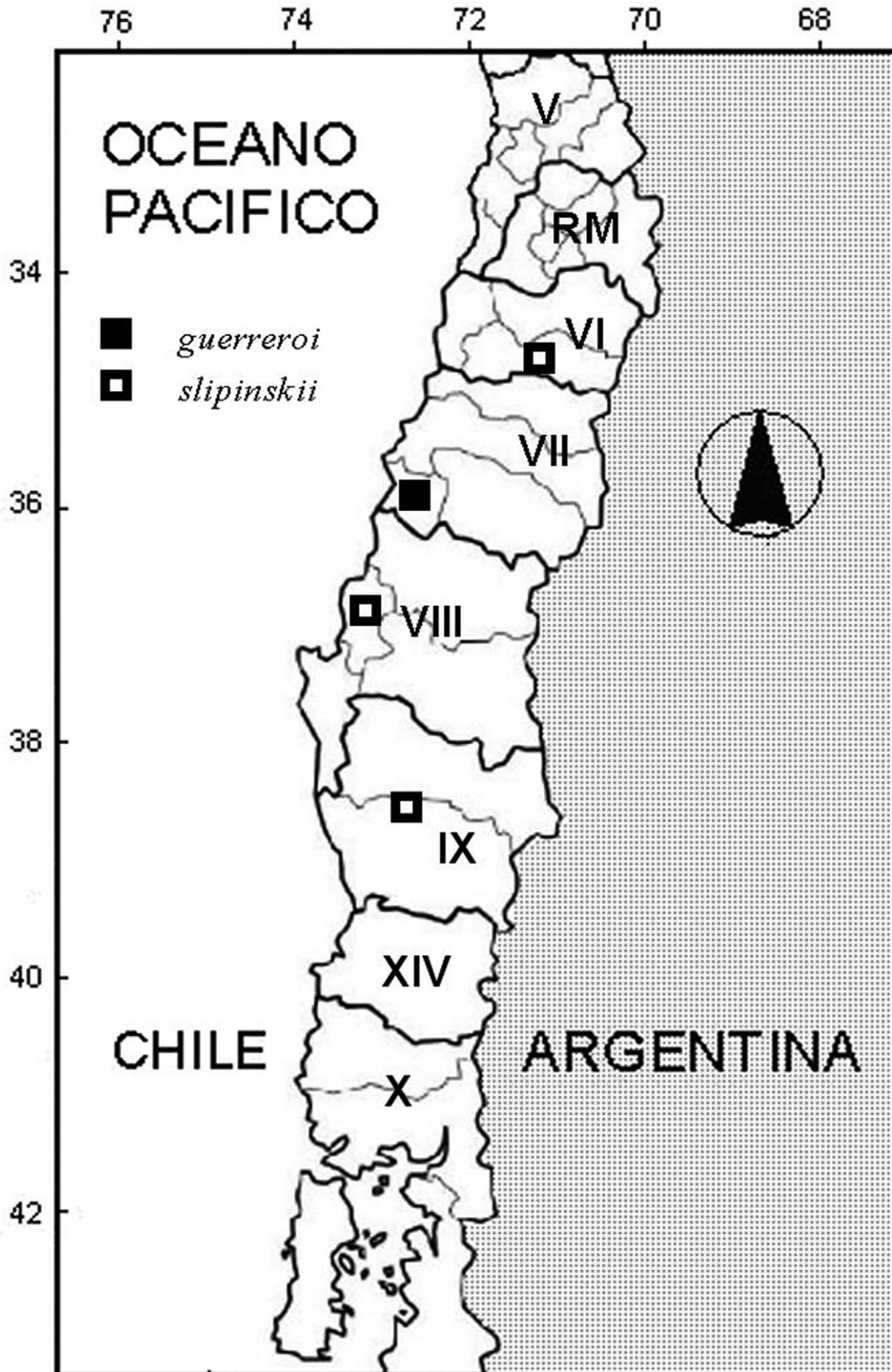


FIGURE 5. Distribution of *H. slipinskii* and *H. guerreroi*.

## References

- Arias, T.E. (2000) *Coleópteros de Chile*. Digitart, Santiago. 209 pp.
- Arias, T.E., Ślipiński, A., Lawrence, J.F. & Elgueta, M. (2009) A review of the Chilean Egoliini (Coleoptera: Trogossitidae) with description of a new species of *Necrobiopsis* Crowson. *Zootaxa*, 2170, 37–45.
- Elgueta, M. (2000) Coleoptera de Chile. In: Martín Píera F., J.J. Morrone & A. Melic (Eds.) Hacia un proyecto CYTED para el inventario y estimación de la diversidad entomológica en Iberoamérica: PrIBES–2000, *Monografías Tercer Milenio*, 1: 145–154. Sociedad Entomológica Aragonesa, Zaragoza.
- Escalona, H.E. & Ślipiński, A. (2012) Generic revision and phylogeny of the Microweiseinae (Coleoptera: Coccinellidae: Microweiseini). *Systematic Entomology*, (2012), 37, 125–171. <http://dx.doi.org/10.1111/j.1365-3113.2011.00601.x>
- Kuschel G. (2000) La fauna curculiónica (Coleoptera: Curculionoidea) de la *Araucaria araucana*. *Revista Chilena de Entomología*, 27, 41–51.
- Lawrence, J.F., Ślipiński, A., Seago, A.E., Thayer, M.K., Newton, A.F. & Marvaldi, A.E. (2011) Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annales Zoologici*, 61, 1–217. <http://dx.doi.org/10.3161/000345411X576725>
- Newton, A.F., Jr. (1985) South temperate Staphylinoida (Coleoptera): their potential for biogeographic analysis of austral disjunctions. In: Ball, G.E. (Ed), *Taxonomy, phylogeny, and zoogeography of beetles and ants*. W. Junk, The Hague, Series *Entomologia*, 33, 180–220.
- Peña, L.E. (1998). *Introducción al estudio de los insectos de Chile*. Editorial Universitaria, Santiago, Chile, 120 pp.
- Ruta, R., Thorpe, S. & Yoshitomi, H. (2011) *Stenocyphon neozealandicus*, a new species from New Zealand of a previously monotypic subfamily from Chile (Coleoptera: Scirtidae: Stenocyphoninae). *Zootaxa*, 3113, 65–68.
- Seago, A., Giorgi, J.A., Li, J. & Ślipiński, A. (2011) Phylogeny, classification and evolution of ladybird beetles (Coleoptera: Coccinellidae) based on simultaneous analysis of molecular and morphological data. *Molecular Phylogenetics & Evolution*, 60 (1), 137–151. <http://dx.doi.org/10.1016/j.ympev.2011.03.015>
- Ślipiński, A. & Lawrence, J.F. (1997) Genera of Colydiinae (Coleoptera: Zopheridae) of the Australo-Pacific Region. *Annales Zoologici*, 47, 341–440.
- Ślipiński, A. & Tomaszewska, W. (2010) Revision of the family Cavognathidae (Coleoptera: Cucujoidea). *Australian Journal of Entomology*, 49 (3), 256–267. <http://dx.doi.org/10.1111/j.1440-6055.2010.00762.x>
- Ślipiński, A. (2007) *Australian Ladybird Beetles (Coleoptera: Coccinellidae). Their biology and classification*. ABRS. Canberra, Australia. 286 pp.
- Thomas, M.C. (2010) A new Chilean species of *Brontoliota* Thomas (Coleoptera: Silvanidae: Brontinae: Brontini). *Insecta Mundi*, 113, 1–4.
- Tomaszewska W. & Ślipiński A. (1995) A review of the family Hobartiidae (Coleoptera: Cucujoidea). *Genus*, 6, 303–325.