

A review of *Helcomeria* STÅL, 1873 (Insecta: Heteroptera: Coreidae), with the description of a new species from Vietnam

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Abstract

The genus *Helcomeria* STÅL, 1873 is reviewed and redescribed. The type species *Helcomeria spinosa* (SIGNORET, 1851) is redescribed and *H. osheai* sp.n. from Vietnam is described as new and illustrated. A lectotype of *Petascelis spinosus* SIGNORET, 1851 is designated. *Helcomeria* belongs to the coreine tribe Mictini.

Key words: Heteroptera, Coreidae, *Helcomeria*, new species, Vietnam.

Zusammenfassung

Die Gattung *Helcomeria* STÅL, 1873 wird revidiert und wiederbeschrieben. Die Typusart *Helcomeria spinosa* (SIGNORET, 1851) wird wiederbeschrieben und *H. osheai* sp.n. aus Vietnam wird neu beschrieben. Ein Lectotypus von *Petascelis spinosus* SIGNORET, 1851 wird festgelegt. *Helcomeria* gehört innerhalb der Unterfamilie Coreinae in die Tribus Mictini.

Introduction

STÅL (1873) erected several tribes within the coreid subfamily Coreinae, among them the tribes Mictini and Petascelidini (as "Mictaria" and "Petiscelidaria"). In doing so, STÅL removed to genera in Mictini several species formerly included in *Petascelis* SIGNORET, 1851. Among these genera were two new ones, *Phyllogonia* STÅL, 1873 for *Petascelis bilobus* SIGNORET, 1850 and *Helcomeria* STÅL, 1873 for *Petascelis spinosus* SIGNORET, 1851. Until now, *Helcomeria* (sometimes misspelled "*Holcomeria*") has contained the single species *H. spinosa*. Here we review and redescribe the genus, *Helcomeria spinosa*, and describe a new species, from Hanoi, Vietnam.

Mictaria STÅL, 1873 was a cosmopolitan tribe of generally large coreines often with spectacular prothoracic ornamentation and with strongly incrassate hind femora, especially in males. More recently, O'SHEA & SCHAEFER (1978) have restricted the tribe Mictini to its Old World members.

STÅL (1873) separated his Mictaria (= Mictini) and Petascelidaria (= Petascelidini) (and hence *Helcomeria* and *Petascelis* s.str.) by the possession of the former of spined fore femora (Petascelidini: not so), and by the absence from Mictini of the double row of small fore femoral spines found in Petascelidini.

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The tip of the scutellum in both species of *Helcomeria* is much darker than the rest of the scutellum, and is turned up and inward, to form a hollow triangular tubercle. As O'SHEA & SCHAEFER (1980) note, this tubercle occurs only in this genus, in *Molipteryx*, and in a new genus from Australia, which at the time was undescribed (see O'SHEA & SCHAEFER 1980: pp. 240, 249). BRAILOVSKY (2002) has since described this Australian genus and species, as *Canungrantmictis morindana* BRAILOVSKY, 2002. This character of the scutellum distinguishes these three genera from all other Mictini (and perhaps from all other Coreidae), and defines them as a holophyletic clade.

In an unpublished portion of his PhD Dissertation, O'SHEA (1975) places *Molipteryx* as the cladistic sister group of *Helcomeria* + the Australian genus (*Canungrantmictis*). Synapomorphies of the latter clade (*Helcomeria* + *Canungrantmictis*) are: posterior angles of abdominal terga with a spine (a bifid spine, in *Helcomeria*) (plesiomorphy: unarmed); and hind tibiae dilated, dorsally and ventrally, in both sexes (plesiomorphy: ventral dilation, in male only) (O'SHEA 1975). The plesiomorphic states occur in *Molipteryx* (O'SHEA 1975, O'SHEA & SCHAEFER 1980). The fore and mid tibiae of both sexes of *Helcomeria* have a small dorsal dilation, the fore (but not the mid) tibiae of both sexes of *Canungrantmictis* have a slight dorsal dilation; if these are homologous, this is a further autapomorphy; these tibiae are terete in *Molipteryx*. *Helcomeria* and *Canungrantmictis* also have, in both sexes, a subdistal spine on the hind femora; the hind femora of *Molipteryx* have two ventral spines; which of these character states is apomorphic and which is plesiomorphic, we do not know. An autapomorphy of *Molipteryx* is that the distolateral lobes of the aedeagus are sclerotized (plesiomorphy: membranous in both *Helcomeria* [O'SHEA & SCHAEFER 1980: fig. 31]) and *Canungrantmictis* (not studied by BRAILOVSKY [2002] but see O'SHEA [1975: fig. 123]).

Helcomeria differs from both *Molipteryx* and *Canungrantmictis* in having a rounded anterior lobe of the metathoracic scent gland peritreme; this lobe is more elongate in the other two genera (reniform in *Canungrantmictis* [BRAILOVSKY 2002]), and we consider the elongate state to be plesiomorphic (because it occurs more widely, including in non-coreid coreoid groups). *Helcomeria* differs from *Canungrantmictis* in the prothoracic expansions, which are broad, toothed, and lateral in *Helcomeria* and narrow, smooth, and anterior in *Canungrantmictis* (cf. Fig. 1; BRAILOVSKY 2002: fig. 4). As mentioned, *Helcomeria* has, and *Canungrantmictis* lacks, a dorsal dilation on the mid tibia; and *Helcomeria* has a double spine on the abdominal terga whereas *Canungrantmictis* has a single spine.

The distribution of these three genera is somewhat anomalous. Both *Helcomeria* and *Molipteryx* occur in Asia, especially in and near northeastern India, whereas *Canungrantmictis*, the sister group of *Helcomeria*, is found in Australia. The three genera together compose a clade whose sister group is *Kenetus* + *Ochrochira* – a clade whose distribution also resembles that of *Helcomeria* and *Molipteryx*.

Helcomeria STÅL, 1873

Helcomeria STÅL, 1873: 37 (original description); DISPONS 1962: 31 (redescription, distribution); HSIAO & al. 1977: 201 (redescription, distribution); O'SHEA & SCHAEFER 1980: 239 (redescription); ZHU & BU 2005: 1103 (key to genera).

Type species: *Petascelis spinosus* SIGNORET, 1851 (by monotypy).

Redescription (modified from that of O'SHEA & SCHAEFER [1980]): Color uniform brown to dark brown (except antennal segment IV and tarsi more pale in *H. osheai* sp.n.). Body large (33 - 42 mm long), relatively depressed. Dorsal and ventral surfaces (including head, thorax, corium, connexiva, abdominal venter, legs) with short, decumbent, golden hairs, except these russet on fore and mid legs. Head quadrate; eyes small, postocular tubercles fairly prominent, flat, embracing small area of eye; preocellar pits large, somewhat rectangular; postocellar pits lateral to level of ocelli, oval; antennifers large, prominent, nearly appressed, compressing and obscuring clypeus, and projecting well anteriorly of it; antennae long, terete, relatively stout, relative lengths of antennal segments $I > IV \geq II > III$. Pronotum steeply declivent, callar and collar less declivent; pronotum armed with faint, narrow, transverse tubercles along midline posterior to callar region; pronotum medially, just posterior to collar, with two more or less prominent tubercles and one smaller posterior one, these wider than long and arranged antero-posteriorly and each preceded by a pit of same size as its tubercle; lateral margins and humeral angles with sharp spines; humeral angles broadly produced laterally, and laterally bearing several small, irregularly arranged, reddish tubercles; posthumeral margins strongly nodulose; broad, low, transverse ridge between bases of humeral angles; posterior margin smooth, very slightly emarginate medially; posterior angles not clearly marked. Scutellum with lateral margins raised, smooth, and with obscure transverse striations (these more distinct on *H. osheai* sp.n.); apex turned up, much darker than rest of scutellum. Wings extending almost to tip of abdomen. Labium reaching almost to mid-coxae (this depending upon degree of flexure of head). Metathoracic scent gland opening located relatively laterally; anterior disc of auricle large, flat, round, contrastingly colored (yellow, pink); posterior disc small. Coxae progressively (anterior to posterior) wider apart; fore and mid femora slightly incrassate (both sexes), posterior femora more incrassate (especially in male); all femora tuberculate, and dorsally and ventrally with a subdistal spine. Fore and mid tibiae dilated dorsally for about the mid one-third of their length; hind tibiae much dilated dorsally and ventrally (both sexes), relative widths and lengths of tibial dilations hind $>$ mid $>$ fore; ventral dilation of male with small spine at midpoint. (Note: left mesotibial expansion of male syntype anomalously small, only 2.99 mm wide.) Tarsi paler than rest of legs; relative lengths of tarsal segments $I > III > II$, segment I equal to $II + III$. Abdomen extending laterally slightly beyond wings; lateral margins of terga with small, blunt, spinelike nodules; posterolateral angle of each tergum (except VII) with small double spines projecting both dorsally and ventrally (spines may be small, and their bifid nature obscure). Abdominal spiracles closer to anterior than to lateral margins of their sterna. Trichobothrial bases pale. Female: plica of female's sternum VII raised, sharply angled. Male: Genital capsule: Opening quadrate. Ventral rim straight, except broadly and very shallowly depressed medially; lateral rims straight, with small broadly rounded internal projection; dorsal rim entire; all rims with small porrect golden hairs, except midlines of ventral dorsal rims. Paramere (Figs. 4, 5) small (in relation to body), base stout, apical $1/4 - 1/3$ curved at least perpendicular to base with small, narrow, curved tip, this rounded; base slightly twisted on itself, so with longitudinal groove; base with broad shallow depression just proximal to slender apical extension, depression with (*H. spinosa*) or without (*H. osheai*) low, faint transverse ridges; external (lateral) surface of base with slender transverse grooves. Aedeagus with divided distodorsal lobe, large unsclerotized distolateral lobes.

Note: The pronotal tubercles are variable in *H. spinosa* (and perhaps in *H. osheai* as well, of which we have only one specimen). In all specimens, the second (the middle one) is well developed. In most *H. spinosa* the anterior tubercle is slight and the pit anterior to it is poorly developed. In our single specimen of *H. osheai*, this tubercle and its pit are well developed; the ridge itself is round. However, in one specimen of *H. spinosa* the tubercle (straight, not round) and its pit are also both well developed.

Distribution: from Sikkim (northern India) and Bhutan into northern Vietnam.

Helcomeria spinosa (SIGNORET, 1851) (Figs. 2, 4)

Petascelis spinosa SIGNORET, 1851: 123 (original description).

Helcomeria spinosa: STAL 1873: 40 (new combination); DISPONS 1962: 30-31 (figure of pronotum, redescription); DISPONS 1963: 17 ff. (distribution, biogeography).

Material examined: **lectotype** (present designation, male, Natural History Museum Vienna): labels: a) *Silhet*/ coll. Signoret, b) *spinusus*/ det. Signoret, c) Lectotypus/ *Petascelis*/ *spinosa* SIGNORET, 1851/ des. Schaefer & Zettel 2006, d) *Helcomeria*/ *spinosa* (SIGNORET)/ Schaefer & Zettel 2006 [note: genitalia mounted separately on pin]; **paralectotype** (female, Natural History Museum Vienna): a) *Silhet*/ Coll. Signoret, b) *spinusus*/ det. Signoret, Paralectotypus/ *Petascelis*/ *spinosa* SIGNORET, 1851/ Schaefer & Zettel 2006, d) *Helcomeria*/ *spinosa* (SIGNORET)/ Schaefer & Zettel 2006. **Additional material** (U.S. National Museum of Natural History): male: a) 65-46 [green label], b) PRUhler/ collection, c) *Petascelis*/ *spinusus* Signoret/ '189.2/ *Silhet* Dr. Signoret; female: a) Assam, b) 100 [pink label], c) 100 *Helcomeria*/ *spinosa*/ Signoret.

Notes: Despite the difference in spelling ("*spinusus*/ *spinosa*"), all these specimens, or the three specimens from "Silhet", may have been once a single collection, part of which was sent to P.R. Uhler. It seems also possible that other (syntype) specimens from the same locality, which were not included in the present study, have been distributed to other museums. With the discovery of a second species in the genus, it is clear that much of Signoret's original description applies to the genus, not solely to the species, *H. spinosa*. To fix the species's identity in the present sense, we designate a lectotype.

Redescription (modified and expanded from those of SIGNORET [1851] and DISPONS [1962]): Body 33 - 39 mm long; brown, slightly suffused with reddish brown on corium; membrane of forewing light brown. Head and body of male heavily beset with short, decumbent, golden hairs; these more sparse on female. Antennal segment I same color as other segments. Distance from postocellar pit to ocellus greater than width of an ocellus; medial edge of pit on level with lateral edge of ocellus. Pronotum behind collar medially with three tubercles, posteriormost the smallest, each preceded by a pit; anterior and posterior tubercles and pits not well defined. Scutellar transverse striations obscure, especially posteriorly. Anterior disc of metathoracic scent gland opening yellow. Dorsal spine of hind tibia broad. Male genital capsule: see below (Fig. 2). Paramere (Fig. 4): apical part recurved relative to base at right angle, ratio base to apical part ca. 1 : 0.26; depression on base proximal to apical part with low transverse ridges or ribs; longitudinal groove (of twist) curved, extending nearly to base; external (lateral) surface of base (not figured) with 8 - 10 narrow, shallow, transverse grooves. Measurements: Tab. 1.

Distribution: China: Yunnan (Xishuangbanna, Mengyang, Mengzhe); Tibet: Motua, Beipeng) (HSIAO & al. 1977); India: Sikkim; Assam (Margherita); Nagaland ("Naga



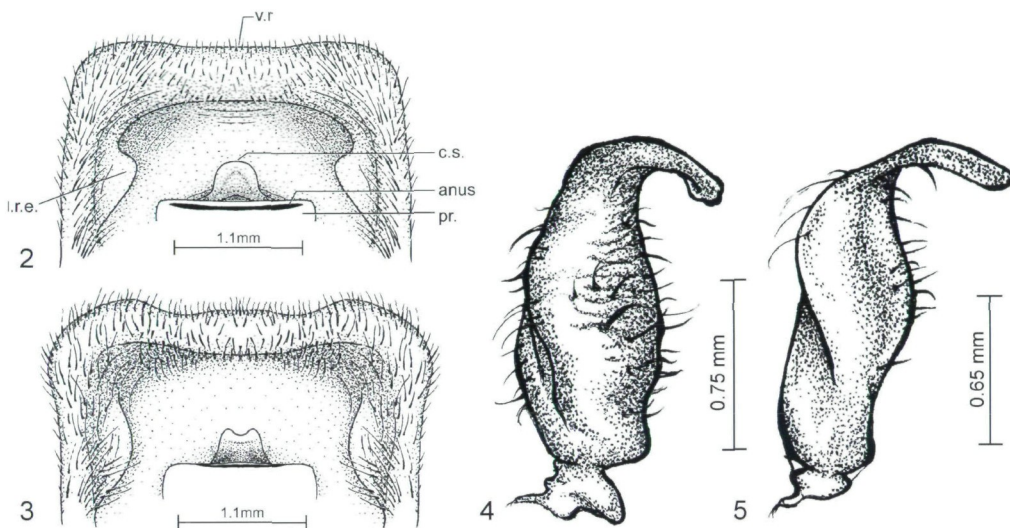
Fig. 1: *Helcomeria osheai*, holotype, male.

Tab. 1: Measurements (in mm) of *Helcomeria osheai* (holotype male) and of *H. spinosa* (male and female syntypes, additional male and female from USNM); a: not adjusted for declivity of head; b: including eyes; c: from ocellar line to anterior edge of antennifers; d: including ovipositor; e: of expansion.

	<i>H. osheai</i> holotype	<i>H. spinosa</i> lectotype male	<i>H. spinosa</i> paralectotype female	USNM male	USNM female
Total length ^a	41.60	38.48	36.40 ^d	35.49	33.80 ^d
Head width ^b	3.51	3.51	3.32	3.38	2.92
Head width before eyes	2.34	2.21	1.95	2.21	2.21
Head length ^c	3.00	2.08	1.95	2.08	2.08
Eye to ocellus	0.38	0.37	0.30	0.30	0.31
Interocular distance	1.62	1.91	1.98	2.06	1.83
Interocellar distance	0.99	0.89	1.01	1.16	0.87
Pronotum width	20.80	19.37	19.11	19.50	17.55
Pronotum length	9.31	7.67	8.32	8.71	8.06
Scutellum width	4.66	5.07	5.20	4.42	4.94
Scutellum length	4.39	4.29	4.75	4.36	3.51
Antennal segment I	10.47	10.01	9.23	9.23	7.93
Antennal segment II	8.58	7.93	7.54	7.67	6.63
Antennal segment III	7.54	6.89	6.31	6.37	6.11
Antennal segment IV	8.84	—	7.09	—	—
Protibia width ^e	4.06	3.12	2.99	3.00	2.21
Protibia length	5.72	5.35	4.68	4.48	3.25
Mesotibia width ^e	4.29	4.94	3.64	3.12	2.60
Mesotibia length	6.42	7.02	8.19	5.92	3.64
Metatibia width ^e	8.45	7.93	7.67	6.76	5.72
Metatibia length	16.64	14.31	15.21	15.60	12.68

Hills"); "Khasi Hills" (DISTANT 1904); Bhutan, Laos (Vien Pou Kha); Myanmar (DISPONS 1962). The type locality is "Silhet" (SIGNORET 1851); if this is the modern Silghat, it is in Assam. The distribution is broadly in the northcentral and northeastern Indian sub-continent, in adjacent southeastern China (Yunnan Province), and in Laos. The southern Yunnan border is about 300 km from Hanoi (*Helcomeria osheai* sp.n.). The Laotian locality is about 400 km from Hanoi (*Helcomeria osheai* sp.n.).

We have also examined two additional specimens (male and female), from the Hungarian Natural History Museum. Each is labelled "Sikkim," and one bears the additional label (which appears to have been cut off) "Holc spinos," in Horváth's handwriting. These specimens measure 34 mm (male) and 32 mm (female) in length, and do not differ from the other *H. spinosa* specimens we have seen.



Figs. 2 - 5: (2, 3) Posterior half of male genital capsule, dorsal view: (2) *Helcomeria spinosa*; (3) *H. osheai* sp.n.; c.s. = cuplike sclerite; l.r.e. = lateral rim infolding; pr. = proctiger; v.r. = ventral rim. (4, 5) Left paramere, internal view: (4) *H. spinosa*; (5) *H. osheai* sp.n.

Helcomeria osheai sp.n. (Figs. 1, 3, 5)

Holotype (male, Natural History Museum Vienna): labels: a) N.-Vietnam 20.-30. IV./ HANOI at light/ leg. E. Jendek/ 1991; b) HOLOTYPUS/ *Helcomeria/ osheai* sp.n./ des. Schaefer & Zettel 2006. Note: male genitalia in glycerine in a vial attached to pin.

Description: Body 41 mm long; dark brown, except corium, fore and mid legs, and hind tibiae dark reddish brown; membrane of forewing very dark brown, nearly black. Head and body lightly to sparsely beset with short, decumbent, golden hairs, except these thick on antennifers. Antennal segment I darker than other segments. Distance from post-ocellar pit to ocellus less than width of an ocellus; medial edge of pit on level with middle of ocellus. Pronotum behind collar medially with three tubercles, each preceded by a pit; tubercles and pits well defined. Scutellar transverse striations distinguishable, even posteriorly. Anterior disc of metathoracic scent gland opening bright rose-pink. Dorsal spine of hind tibia acuminate. Male genital capsule: see below (Fig. 3). Paramere (Fig. 5): apical part recurved perpendicular to base; ratio base to apical part ca. 1 : 0.34; depression on base proximal to apical part with several large setae, without ridges or ribbing; longitudinal groove (of twist) extending slightly more than halfway along base; external (lateral) surface of base (not figured) with 5 - 6 deep, wide, transverse grooves. Measurements: Tab. 1.

Etymology: This species is named in honor of Rodney O'Shea, who, with the senior author, showed the coreine tribe Mictini (s.lat.) is not monophyletic, and who revised at the generic level the Mictini (s.str.), the Nematopodini, and the Acanthocerini.

Distribution: Vietnam (Hanoi). It is possible that the *H. spinosa* that DISPONS' (1962: 1963) records from Laos is in fact *H. osheai*, as may also be other eastern records.

Comparative notes: The two species now in *Helcomeria* are closely related, and their differences, although consistent, are not great. *H. osheai* sp.n. is the larger (Tab. 1) and is darker brown. Other significant differences are the yellow auricular disc in *H. spinosa* and the bright rose-pink disc in *H. osheai*; the possession by the latter of better defined pronotal tubercles and pits; and the dark first antennal segment of *H. osheai*. In addition, the dorsum of *H. spinosa* is heavily and uniformly beset with small recumbent golden setae; these are quite sparse on *H. osheai* and are clumped in this species on the claval area in such a way that this area appears mottled.

Other differences occur in the genital capsules and parameres of the males. In the genital capsule of *H. spinosa* (Fig. 2) the posterior margin of the ventral rim and the inner margin of the lateral rim are both straight and meet at a rounded right angle; the lateral rim infolding is broadly triangular and thrusts farther into the capsule's interior than does that of *H. osheai* (Fig. 3); the cuplike sclerite (fused with the median projection [see SCHAEFER 1977]) is straight across; and the capsule itself is dark brown. In contrast, the ventral rim of the *H. osheai* capsule is slightly emarginate over its middle half, so there is a slight bulge where it meets the lateral rim; the lateral rim infolding is broad and low, not triangular, and not thrusting very deeply into the capsule's interior; the cuplike sclerite (plus median projection) is partly folded onto itself longitudinally, thus producing a groove on the ventral surface; and the capsule itself is very dark brown, nearly black.

The parameres of the two species (Figs. 4, 5) are quite similar; each is small relative to the large size of the insect itself, a feature not unusual in large coreines (cf. those of other Old World mictines [O'SHEA & SCHAEFER 1980]), and of *Thasus*, a New World Nematopodini [BRAILOVSKY & al. 1994]). The paramere of *H. spinosa* is slightly larger than that of *H. osheai* (1.50 mm. and 1.35 mm, respectively). The tip of the *Helcomeria osheai* paramere is more prolonged than that of *H. spinosa*, whose prolonged tip is curved at a steeper angle than that of *H. osheai*. The longitudinal groove of the *H. osheai* paramere is shorter than that of the *H. spinosa* paramere, and less curved. The inner surface of the former lacks and that of the latter has indistinct transverse ridges. Finally, the transverse grooves on the lateral surface of the *H. osheai* paramere are deeper, wider, fewer, but less long than those of the *H. spinosa* paramere.

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