Revision of the New World lygaeoid genus *Epipolops* (Heteroptera: Geocoridae: Pamphantinae: Epipolopini), with descriptions of five new species[1]

Thomas J. Henry

Systematic Entomology Laboratory, PSI, ARS, United States Department of Agriculture, c/o National Museum of Natural History, Smithsonian Institution, MRC-0168, Washington, D.C. 20013-7012, United States of America (e-mail: thenry@sel.barc.usda.gov)

Abstract—Five new species of the Neotropical geocorid genus *Epipolops* are recognized, raising to 14 the number of known species. The new species *E. angelae* **sp. nov.**, *E. kathrynae* **sp. nov.**, *E. scudderi* **sp. nov.**, *E. slateri* **sp. nov.**, and *E. thomasi* **sp. nov.** are described, the identity of *E. mucronatus* Distant is clarified, and the nine previously known species are diagnosed and redescribed. Photographs, scanning electron photomicrographs, outline illustrations of all pronota and hemelytra, and an identification key are provided to help distinguish species.

Résumé—*Epipolops*, un genre néotropical des géocorides, comprend 14 espèces y comprit les cinq nouvelles décrites ici, *E. angelae* **sp. nov.**, *E. kathrynae* **sp. nov.**, *E. scudderi* **sp. nov.**, *E. slateri* **sp. nov.** et *E. thomasi* **sp. nov.** L'identité de *E. mucronatus* Distant est clarifiée et des diagnoses et redecriptions sont fournies pour les neuf espèces antérieurment nommées. Des photos, des micrographies obtenue au microscope électronique à balayage, des dessins de tout les pronota et hemélytres, et un clef d'identification sont fournis pour aider à séparer les espèces.

Introduction

Bugs of the genus *Epipolops*, with their remarkably stalked eyes and laterally protuberant pronota, are among the most unusual heteropterans. Because of their unique external morphology, the classification of these bugs has fluctuated among several family-group taxa. Herrich-Schaeffer (1850) established the monotypic genus *Epipolops* for his new Brazilian species *E. frondosus*, placing it near the genus *Cymus* Hahn. Stål (1868) considered the genus to belong in his subfamily Geocorida, where it remained until Ashlock (1957) transferred it to Cymini. Hamid (1975), although noting the misplacement of this genus in Cyminae, did not offer an alternative placement. Brailovsky (1990), in describing two new species, transferred *Epipolops* to the subfamily Bledionotinae without comment, and Slater and O'Donnell (1995) placed the genus in the bledionotine tribe Pamphantini. Slater (1998) followed Henry's (1997) elevation of Geocorinae to family status, which included the subfamilies Bledionotinae, Geocorinae, and Pamphantinae, and noted that he believed *Epipolops* warranted placement in its own tribe. As a consequence, he established Epipolopini within Pamphantinae for *Epipolops*, where the genus remains (Slater 1999).

In this paper, I describe five new species of *Epipolops*, one from Bolivia, one from Brazil, two from Ecuador, and one from Panama, and redescribe the nine previously known species. Provided are dorsal and lateral photographs, pronotal and hemelytral outline drawings, selected scanning electron photomicrographs, and a revised identification key to aid in recognizing species.

Acronyms for institutions cited in this paper are as follows:

AMNH	American Museum of Natural History, New York, United States of America
BMNH	Natural History Museum, London, United Kingdom

Received 19 July 2004. Accepted 19 December 2004.

[1]This paper is part of a special issue honouring Geoffrey G.E. Scudder for his significant contributions to entomology in Canada.

MNRJ Departamento de Entomologia, Museum Nacional Universidade Federal Rio de Janeiro, Quinta Boa Vista, Rio de Janeiro, Brazil

UNAM Departamento de Zoología, Instituto de Biología, Universidad Nacional Autónoma de México, Mexico, D.F.

USNM [United States] National Museum of Natural History, Washington, D.C., United States of America

Annotation abbreviations are as follows: cat., catalog; classif., classification; descrip., description; distr., distribution; illus., illustration(s); n. comb., new combination; n. gen., new genus; n. sp., new species; and n. tribe, new tribe.

Epipolops Herrich-Schaeffer, 1850

Epipolops Herrich-Schaeffer 1850: 191, 201 (n. gen., illus.), Stål 1868: 75 (classif.), Lethierry and Severin 1894: 168 (cat.), Ashlock 1957: 416 (classif.), Slater 1964: 416 (cat.), Brailovsky 1990: 125 (note, key spp.), Slater and O'Donnell 1995: 72 (cat.), Slater 1998: 64 (note, key spp.), Slater 1999: 200 (classif., n. tribe), Slater and Henry 1999: 304 (note).

Type species: *Epipolops frondosus* Herrich-Schaeffer, 1850. Monotypic.

Haemus Stål 1862: 312 (n. gen., illus.).

Type species: *Cimex oculuscancri* De Geer, 1773. Synonymized by Stål 1874: 133.

Enciscoa Distant 1893: 389 (n. gen.). Included species: *Enciscoa acuminatus* Distant, 1893, *E. inermis* Distant, 1893, and *E. mucronatus* Distant, 1893. Synonymized by Bergroth 1893: 225.

Diagnosis

Members of this genus are recognized by the long, slender, stalked eyes extending well beyond the lateral margins of the pronotum (*e.g.*, Figs. 1, 3, 5, 7); the generally broad pronotum usually armed laterally with setigerous spines or variously shaped processes (Figs. 53–66); the long to relatively short, erect, barbed dorsal setae (Figs. 17, 18, 25, 26, 45, 46); and the translucent to opaque, broadly rounded, distinctly punctate hemelytra, often marginally crenulate and often with a toothlike process on the basal third of the lateral margin (*e.g.*, Figs. 70, 72, 74, 76, 79).

Discussion

Slater (1999) based the establishment of his tribe Epipolopini on a combination of the stalked eyes, laterally tuberculate pronotum, well-developed and elongate claval commissure, fused abdominal sterna 2–4, ventral abdominal spiracles on segments II and V–VII, dorsal spiracles on abdominal segments III–IV, the posteriorly curved abdominal sutures between terga 4–5 and 5–6, the deep wide dorsal punctures, the nearly contiguous metacoxae, and the absence of a stridulitrum on the head.

As discussed in my analysis of the Pentatomomorpha (Henry 1997), geocorids are recognized by their unusually modified eyes, the dorsal position of certain abdominal spiracles, and the posteriorly curved dorsal abdominal sutures (between segments 4–5 and 5–6) on nymphs. Three species of *Epipolops* I have examined using scanning electron microscopy (SEM) (*E. frondosus*, *E. kathrynae*, and *E. rettenmeyeri*) lack ventral spiracles on abdominal segment II, as described by Slater (1999). SEM work also revealed for the first time unusual barbed setae on the dorsum of three species. For *E. angelae* and *E. kathrynae*, these setae are stout or thickened (Figs. 25, 26), while for *E. rettenmeyeri* they are longer and much more slender (Figs. 45, 46). Closer inspection using a stereomicroscope indicates that all species of *Epipolops* appear to possess these peculiarly modified setae, which may serve a defensive function. Whatever their purpose, however, these barbed setae appear to be unique in the Geocoridae and perhaps in all of the Lygaeoidea.

Despite their unusual appearance, relatively few specimens of *Epipolops* are present in collections and little is known of their biology and hosts. Based on my field collections, it seems clear that members of the genus are phytophagous. Adults and nymphs of *E. kathrynae* were not uncommon on the terminal stems of a *Cecropia* sp. (Cecropiaceae) in Ecuador. No potential prey were observed, and the few ants that were present did not seem to be associated with this species. I also collected *E. frondosus* and *E. oculuscanri* north of Brasilia, Brazil, but their general presence among dense vegetation made it difficult to determine a specific host. A few other individuals bear labels giving host associations, but it is unclear

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

whether these represent true hosts or merely sitting records.

The description of five new species in this paper raises to 14 the number of known species of *Epipolops*.

Key to the species of *Epipolops*

1. Anterior pronotal lobe unarmed, lacking conspicuous lateral spines or processes . . . 2
   Anterior pronotal lobe with conspicuous lateral spines or processes . . . 3
2. Posterior pronotal lobe unarmed, lacking a lateral spine or process (Figs. 33, 61) . . . *oculuscanri* (De Geer)
   Posterior pronotal lobe armed with an elongate, distally acute lateral process (Figs. 1, 53) . . . *acuminatus* (Distant)
3. Lateral processes bearing multipointed spines, each ending in a long seta (Figs. 9, 13, 57) . . . *frondosus* (Herrich-Schaeffer)
   Lateral processes not multipointed, each lobe with only one elongate or spatulate process . . . 4
4. Basal margin of hemelytron with a conspicuous toothlike process (Figs. 70, 72, 74, 76, 79, 80) . . . 5
   Basal margin of hemelytron lacking a conspicuous tooth . . . 9
5. Hemelytral toothlike process small (Figs. 72, 74, 79, 80) . . . 6
   Hemelytral toothlike process large (Figs. 70, 76) . . . 8
6. Lateral pronotal process on posterior lobe distally acute (Figs. 31, 60) . . . *mucronatus* Distant
   Lateral pronotal process on posterior lobe distally quadrate (Figs. 65, 66) . . . 7
7. Edges of lateral pronotal processes crenulate (Figs. 49, 65); lateral process on posterior lobe as long as or longer than anterior process; humeral angle sharp, tuberculate (Fig. 65) . . . *slateri* **sp. nov.**
   Edges of lateral pronotal processes smooth (Figs. 51, 66); lateral process on posterior lobe much shorter than anterior process; humeral angle rounded (Fig. 66) . . . *thomasi* **sp. nov.**
8. Hemelytral toothlike process large, subequal in size to lateral process on posterior pronotal lobe (Figs. 35, 76); spot on middle of corium pale orange–brown . . . *quadrispinus* Stål
   Hemelytral toothlike process smaller than lateral process on posterior pronotal lobe (Figs. 7, 70); spot on middle of corium dark brown . . . *bellus* Brailovsky
9. Anterior angle of pronotum with a short, sharp tubercle (Figs. 39, 64) . . . *scudderi* **sp. nov.**
   Anterior angle of pronotum without a short, sharp tubercle . . . 10
10. Dorsum clothed with stout, black and white setae (Figs. 3, 11) . . . 11
    Dorsum clothed with slender, yellowish brown setae . . . 12
11. Dorsal setae much shorter than diameter of eye stalk (Figs. 11, 12, 21); lateral pronotal processes stout, spatulate (Figs. 11, 24, 58); humeral angle with only a distinct dark spot . . . *kathrynae* **sp. nov.**
    Dorsal setae nearly as long as diameter of eye stalk (Figs. 3, 4); lateral pronotal processes slender, distally pointed (Figs. 3, 54); humeral angle with a short, sharp, dorsal tubercle (Fig. 54) . *angelae* **sp. nov.**
12. Lateral pronotal processes curving forward (Figs. 37, 44, 63) . . . *rettenmeyeri* Slater
    Lateral pronotal processes straight or curving backward . . . 13
13. Lateral process on posterior lobe short, marginally crenulate, distally rounded or spatulate (Figs. 5, 55); midlateral area of corium before margin with a dark brown, half-moon-shaped mark (Fig. 5) . . . *arboricolus* Brailovsky
    Lateral process on posterior lobe more slender, marginally smooth, distally variable, but not spatulate (Figs. 59*a*–59*c*); midlateral area of corium without a half-moon-shaped mark, only with a smaller dark spot at middle (Fig. 29) . . . *lenkoi* Canter

Epipolops acuminatus (Distant, 1893)

(Figs. 1, 2, 53, 67)

Enciscoa acuminatus Distant 1893: 389 (n. sp.).

Epipolops acuminatus: Lethierry and Severin 1894: 168 (cat., n. comb.), Canter 1964: 64 (key), Slater 1964: 417 (cat.), Brailovsky 1990: 132 (key), Slater 1998: 65 (distr., key).

Type specimen examined

Holotype ♂: label 1 (circular with orange ring), "Type"; label 2, "Bugaba [Panama], 800–1500 ft, Champion"; label 3, "B.C.A., Hem. I., *Enciscoa acuminatus*"; label 4, "sp. figured"; label 5 (handwritten), "Enciscoa acuminatus Dist." (BMNH).

Other specimens examined

BOLIVIA: 1 ♀, Apolo, N. La Paz,

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

5/15.viii.1989, L.E. Peña (USNM); 2 ♀♀, Ciruata-Cajuata, 2400 m, La Paz, 3–5.xii.1984, L.E. Peña (USNM); 2 ♀♀, Coroico, 1800–2100 m, La Paz, 30.xi.–2.xii.1984, L.E. Peña (USNM); 1 ♂, Coripata, 1700 m, Yungas, La Paz, 1.xii.1984, L.E. Peña (USNM); 1 ♂, Pte Mururata, Yungas, La Paz, 1600 m, 24–26.xii.1984, L.E. Peña (USNM); 1 ♀, Rio Ronquito, 1900 m, Chapare, 9–11.xii.1984, L.E. Peña (USNM); 2 ♂♂, Rio Zongo, 1400 m, La Paz, 24–30.x.1984, L.E. Peña (USNM). **COSTA RICA:** 1 ♀, intercepted at Houston, Texas (by the Animal and Plant Health Inspection Service / Plant Pest Quarantine, United States Department of Agriculture), 15.xii.2003, on *Pandanus* sp. (USNM).

Diagnosis

Epipolops acuminatus is distinguished from all other members of the genus by possessing a lateral process only on each side of the posterior pronotal lobe (Figs. 1, 53). Only *E. oculuscanri* lacks both lateral pronotal processes (Figs. 33, 61), whereas all other species have four processes, one on each side of each lobe.

Description

Male (n = 4; holotype in parentheses): length 4.40–5.05 mm (4.35 mm), basal width 1.66–2.00 mm (1.25 mm). **Head:** length 0.56–0.61 mm (0.61 mm), width across eyes 1.60–1.76 mm (1.54 mm), length from ocellus to outer margin of eye 0.62–0.72 mm (0.65 mm). **Labium:** length 1.68–1.71 mm (labium obscured under body of holotype). **Antenna:** length of segment I, 0.83–0.88 mm (0.81 mm); II, 0.50–0.58 mm (0.51 mm); III, 0.35–0.37 mm (0.38 mm); IV, 0.53–0.58 mm (0.53 mm). **Pronotum:** length 1.08–1.10 mm (0.95 mm), basal width 1.39–1.52 mm (1.30 mm).

Female (n = 5): length 4.10–4.25 mm, width 1.94–2.14. **Head:** length 0.62–0.68 mm, basal width 0.61–0.64 mm, width across eyes 1.44–1.50 mm, length from ocellus to outer margin of eye 0.61–0.64 mm. **Labium:** length 2.00–2.04 mm, extending to metacoxae. **Antenna:** length of segment I, 0.66–0.69 mm; II, 0.48–0.52 mm; III, 0.49–0.53 mm; 0.49–0.53 mm. **Pronotum:** length 0.98 mm, basal width 1.55–1.62 mm.

Coloration: overall pale yellowish brown. Head yellowish brown; eyes and ocelli red to reddish brown. Pronotum yellowish brown with spots on anterior lobe and four vague marks across posterior margin darker brown; scutellum yellowish brown, basal third dark brown or fuscous, apex pale yellowish brown. Hemelytron translucent yellowish brown, punctures stained with darker brown, apical margin of corium bordering membrane dark brown. Antenna pale yellowish brown; segment I with a narrow brown line on posterior face. Legs uniformly pale yellowish brown. Ventral surface yellowish brown, with a large, brown, lateral spot on each of fused abdominal segments II–IV and segments V and VI.

Structure and vestiture: overall dorsal surface shiny. Head impunctate, weakly rugose around eye stalks, with long, erect, slender, pale setae on vertex, frons, and eye stalks, length of some setae subequal to diameter of an eye stalk. Pronotum evenly and deeply punctate, with long, erect, slender, pale setae; lateral margin of anterior lobe rounded, sometimes with an indistinct, short, stublike process; posterior lobe with a long, slender, distally pointed lateral process; punctures anterior to calli and on posterior lobe largest and deepest; calli with a narrow, transverse, polished area surrounded by a narrow field of dull or glaucous cuticle; scutellum sparsely punctate, weakly swollen across middle, more depressed at base and apex. Hemelytron translucent; laterally weakly convex and narrowed on basal half, marginally smooth, without a tooth near base; clothed with long, erect, slender, pale setae on clavus and inner margin of corium and shorter, more reclining marginal setae on basal half.

Host

One specimen from Costa Rica was taken on *Pandanus* sp. (Pandanaceae).

Distribution

Described from Panama (Distant 1893) and later reported from Honduras and Mexico (Slater 1998). Bolivia and Costa Rica are new country records.

Epipolops angelae sp. nov.

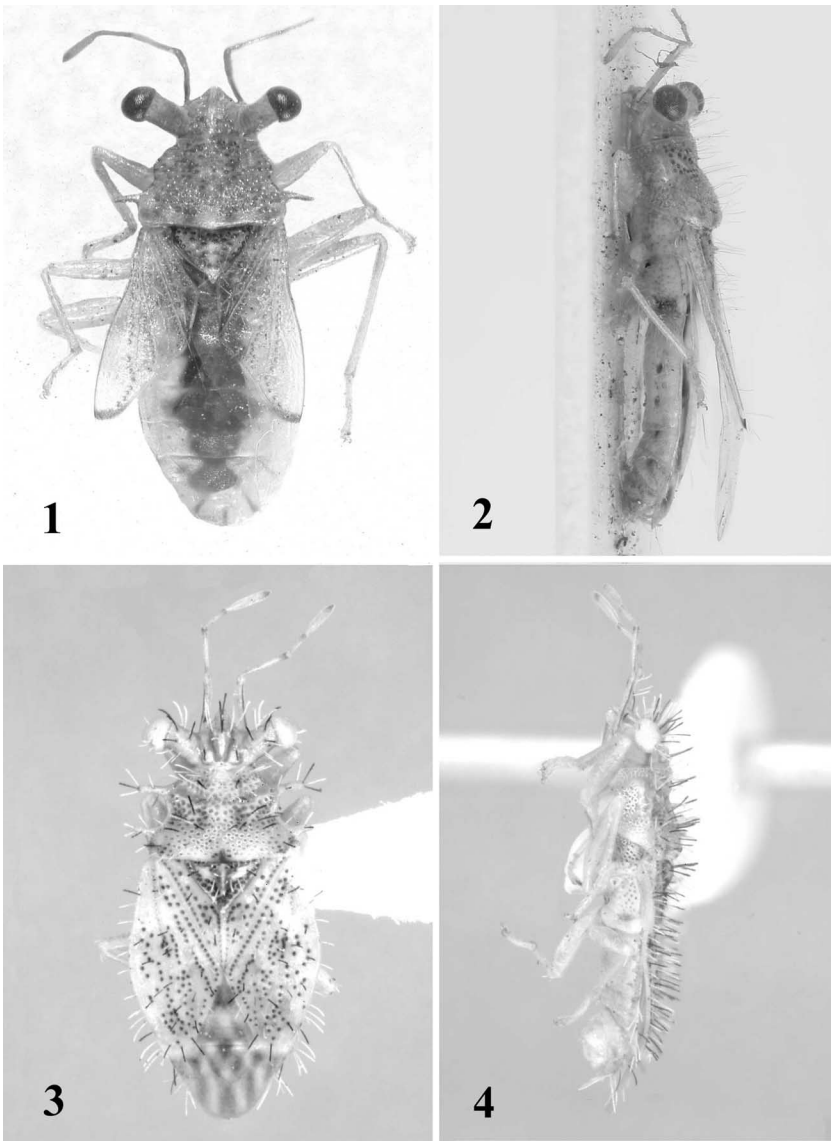
(Figs. 3, 4, 54, 68)

Type specimens

Holotype: ♂, Brazil, Distrito Federal, 2 km W of Brasília [about 15°47′S, 47°54′W], 18.xi.1997, T.J. Henry (MNRJ). **Paratypes:** 3

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 1–4. Photographs of *Epipolops* spp. *Epipolops acuminatus* (holotype): 1, dorsal aspect; 2, lateral aspect. *Epipolops angelae*: 3, dorsal aspect; 4, lateral aspect.



♂♂, 4 ♀♀, same data as for holotype (1 ♀, MNRJ; 3 ♂♂, 3 ♀♀, USNM).

Etymology

Named in honor of my daughter, Angela Marie Henry Townsend, whose inner strength and determination have always been an inspiration to me.

Diagnosis

Epipolops angelae is distinguished by the small size (3.96–4.25 mm); the slender lateral pronotal processes, with the posterior one distally pointed (Fig. 54); the sharp dorsal spine at each posterior pronotal angle (Fig. 54); the contrasting brown-stained punctures on the hemelytra (Fig. 3); and the long, stout, distinctly barbed, mixed all white and all black setae on the head, pronotum, and hemelytra (Figs. 3, 4).

Description

Male (n = 4; holotype measurement first): length 3.96–4.20 mm, width 1.90–1.98 mm. **Head:** length 0.62–0.72 mm, basal width 0.55–0.57 mm, width across eyes 1.47 mm,

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

length from ocellus to outer margin of eye 0.60–0.61 mm. **Labium:** length 1.85–1.88 mm, extending to metacoxae. **Antenna:** length of segment I, 0.60–0.64 mm; II, 0.48–0.52 mm; III, 0.29–0.33 mm; IV, 0.47–0.51 mm. **Pronotum:** length 0.90–0.96 mm, basal width 1.42–1.44 mm.

Female (n = 4): length 4.10–4.25 mm, width 1.94–2.14 mm. **Head:** length 0.62–0.68 mm, basal width 0.61–0.64 mm, width across eyes 1.44–1.50 mm, length from ocellus to outer margin of eye 0.61–0.64 mm. **Labium:** length 2.00–2.04 mm, extending to metacoxae. **Antenna:** length of segment I, 0.66–0.69 mm; II, 0.48–0.52 mm; III, 0.49–0.53 mm; IV, 0.49–0.53 mm. **Pronotum:** length 0.98 mm, basal width 1.55–1.62 mm.

Coloration: very pale yellowish brown, with head and pronotal regions more yellowish brown. Head yellowish brown, some specimens with meson of clypeus, margin of carina on frons and vertex, and a line on posterior face of eye stalks narrowly red; eyes and ocelli faintly tinged with red. Antenna pale yellowish brown, segment I with a narrow brown line on lateral face; base and apex of segment II and apices of segments III–V narrowly dark brown. Pronotum yellowish brown; punctures, especially those on posterior lobe, brown to dark brown; spot at middle of base and spine at each posterolateral angle dark brown; scutellum yellowish brown, with dark brown punctures. Hemelytron very pale yellowish brown, with contrasting darker brown punctures; membrane clear, streaked with elongate brown marks between veins. Ventral surface pale yellowish brown, with a black spot at each anterior corner of abdominal segments V–VII. Legs uniformly pale yellowish brown.

Structure and vestiture: head shiny, smooth, eye stalks with only traces of weakly rugose lines; median carina broadening from between ocelli to base of clypeus; clothed with long, erect, stout, barbed, all black intermixed with all white setae. Pronotal surface dull, with narrow transverse area across calli shiny, impunctate; each posterior angle with a short, sharp tubercle, middle of base with a short, indistinct, rounded protuberance; anterior lateral process slender, straight, distally rounded; posterior lateral process slender, straight, distally acute or sharp; evenly clothed on dorsum and processes with long, erect, stout, barbed, all black mixed with all white setae. Hemelytra laterally convex, finely crenulate, gradually narrowing before ending abruptly at an angle at base of pronotum; basal area without a lateral toothlike process; clothed with erect, stout, barbed, all black mixed with all white setae; setae along lateral margins mostly white.

Host
Unknown.

Distribution
Known only from Distrito Federal, Brazil.

Epipolops arboricolus Brailovsky, 1990

(Figs. 5, 6, 55, 69)

Epipolops arboricolus Brailovsky 1990: 126 (n. sp., key), Slater and O'Donnell 1995: 72 (cat.), Slater 1998: 67 (key).

Type specimens examined
Holotype ♂: "Amazonas [Brazil], 18.1 km e Campinas field sta., Km 60, n Manaus, 22 Feb. 1979, 2°30′S, 60°15′W, Montgomery, Erwin, Schimmel, Krischik, Date, and Bacon colls., terre firme forest canopy fogged with pyrethrum, sample # 19" (USNM). **Paratype** ♂, same data as for holotype (UNAM).

Other specimen examined
BRAZIL: ♂, same data as for holotype (not mentioned in original description) (USNM).

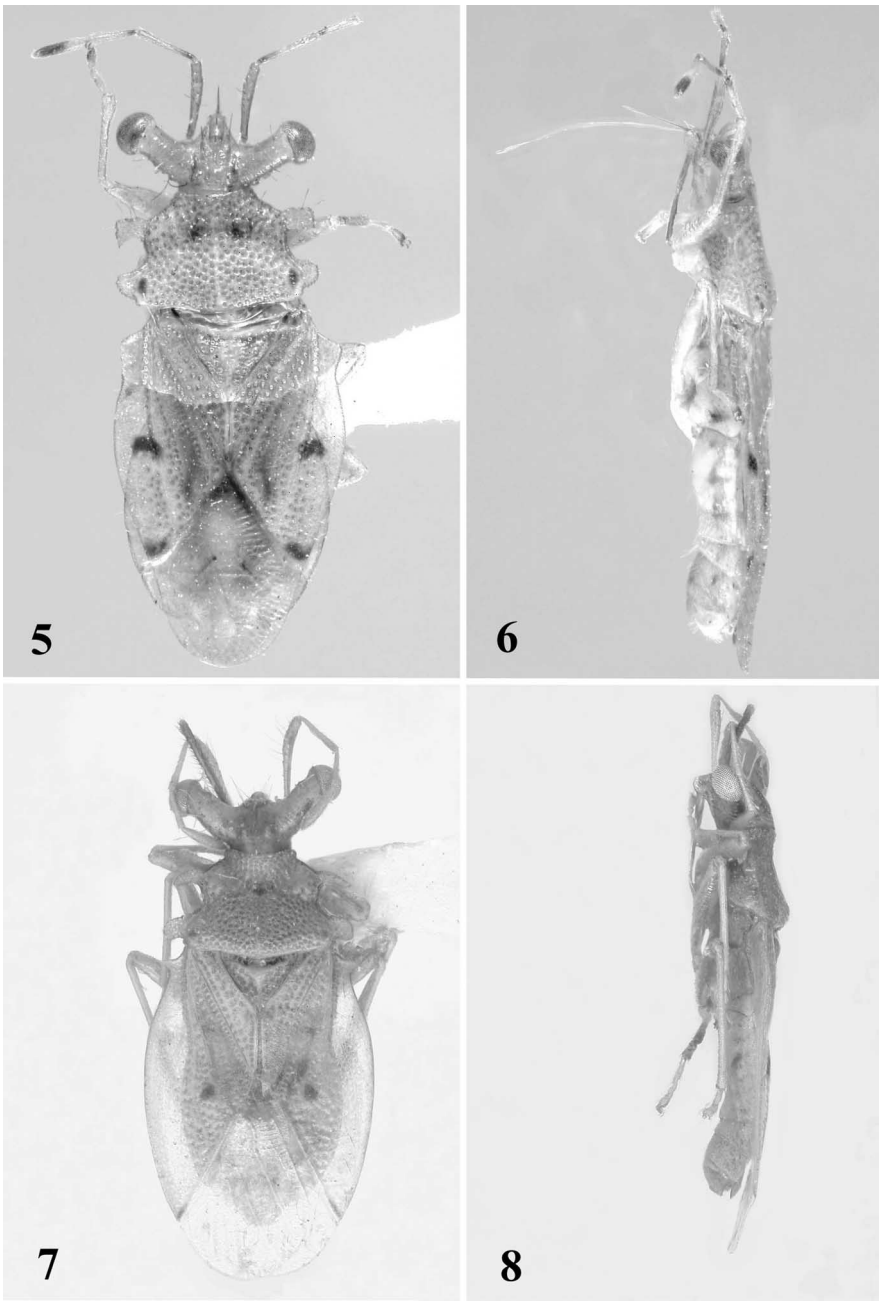
Diagnosis
This species is distinguished by the distally quadrate, marginally crenulate anterior pronotal process (Figs. 5, 55); the short, distally rounded, marginally crenulate posterior pronotal process (Fig. 55); the truncate basal hemelytral margin (Fig. 69); and the half-moon-shaped mark near the middle of the corium (Fig. 5).

Description
Male (holotype): length 4.28 mm, width 1.78 mm. **Head:** length 0.64 mm, basal width 0.56 mm, width across eyes 1.54 mm, length from outer margin of ocellus to apex of eye 0.69 mm. **Labium:** length about 1.48 mm (bent), extending to about middle coxae. **Antenna:** length of segment I, 0.69 mm; II, 0.53 mm; III, 0.36 mm; IV, 0.53 mm. **Pronotum:** length 0.91 mm, basal width 1.34 mm.

Coloration: overall yellowish brown, with various brown marks and spots. Head yellowish

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 5–8. Photographs of *Epipolops* spp. *Epipolops arboricolus* (paratype): 5, dorsal aspect; 6, lateral aspect. *Epipolops bellus*: 7, dorsal aspect; 8, lateral aspect.



brown; eyes and ocelli red; eye stalk with an indistinct brown line on distal two thirds of posterior face and narrowly around base bordering vertex. Antenna yellowish brown, bases of segments II and III and distal half of segment IV dark brown to fuscous. Pronotum yellowish brown with a small brown spot on each callus and at each humeral angle; scutellum uniformly yellowish brown. Hemelytra yellowish brown; corium with a large, brown, half-moon-shaped mark at middle and a slightly smaller mark at apex bordering membrane. Ventral surface and legs uniformly yellowish brown.

Structure and vestiture: head impunctate, weakly rugose around eye stalks, with long, slender, erect, pale setae and a few dark, simple

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

setae on vertex, frons, and eye stalks; eye facets nearly glabrous with only very short, fine setae. Pronotum evenly punctate, with scattered, long, erect, simple setae; anterior lateral process elongate, apically quadrate, finely serrate distally, and weakly curved posteriorly; posterior lateral process short, distally rounded, finely serrate distally, and touching humeral angle. Hemelytron laterally finely crenulate, weakly concave, and weakly convex before abruptly truncated base; glabrous (or setae badly rubbed). Abdominal segments lacking long marginal setae visible from dorsal aspect.

Host

Unknown.

Distribution

Described and known only from the holotype (USNM) and a paratype male (UNAM) from Brazil (Amazonas) (Brailovsky 1990).

Epipolops bellus Brailovsky, 1990

(Figs. 7, 8, 56, 70)

Epipolops bellus Brailovsky 1990: 127 (n. sp., key), Slater and O'Donnell 1995: 72 (cat.), Slater 1998: 67 (key).

Specimen examined

VENEZUELA: 1 ♂ paratype, Caracas, 5.iii.1967, Avila Mari-Perez (UNAM).

Diagnosis

This species is distinguished by the small size; slender, distally acute anterior pronotal process (Fig. 56); stouter, more spatulate or rounded posterior pronotal process (Fig. 56); and the sharp toothlike process laterally at the base of each hemelytron (Figs. 7, 70).

Description

Male (n = 1): length 3.84 mm, width 1.78 mm. **Head:** length 0.48 mm, basal width 0.48 mm, width across eyes 1.39 mm, length of eye stalk from outer edge of ocellus to outer edge of eye 0.68 mm. **Labium:** length 1.45 mm, extending to middle coxae. **Antenna:** length of segment I, 0.73 mm; II, 0.47 mm; III, 0.33; IV, 0.46 mm. **Pronotum:** length 0.83 mm, basal width 1.24 mm.

Coloration: overall uniformly brown. Head uniformly brown; eyes and ocelli faded red. Antenna uniformly brown; segment I lacking narrow dark brown line often present in other species. Pronotum uniformly brown, with a small, darker brown spot at each posterior angle. Hemelytron translucent brown; corium with narrow apical margin bordering membrane and spot at middle dark brown. Ventral surface brown, abdomen more yellowish brown. Legs evenly brown.

Structure and vestiture: head shiny, impunctate, with a distinct, narrow carina on meson from between ocelli to base of clypeus; eye stalks weakly rugose basally; clothed with long, erect, simple setae longer than diameter of eye stalk on vertex, frons, and dorsal surface of eye stalk. Pronotum evenly punctate, except for broad, smooth area across calli; process on anterior lobe slender, distally acute, and weakly curved posteriorly; process on posterior lobe stout, broadly rounded or spatulate distally, and curved posteriorly; nearly glabrous (possibly rubbed), with only one long, erect seta near base of anterior lateral process; scutellum punctate, except for mesal and transverse carinae. Hemelytra laterally convex, marginally smooth, with a distinct toothlike process at base; apparently glabrous (but possibly rubbed).

Host

Unknown.

Epipolops frondosus Herrich-Schaeffer, 1850

(Figs. 9–10, 13–20, 57, 71)

Epipolops frondosus Herrich-Schaeffer 1850: 202 (n. sp.), Lethierry and Severin 1894: 168 (cat.), Canter 1964: 64 (descrip., key), Slater 1964: 417 (cat.), Brailovsky 1990: 128 (descrip., figs., key), Slater 1998: 65 (distr., key).

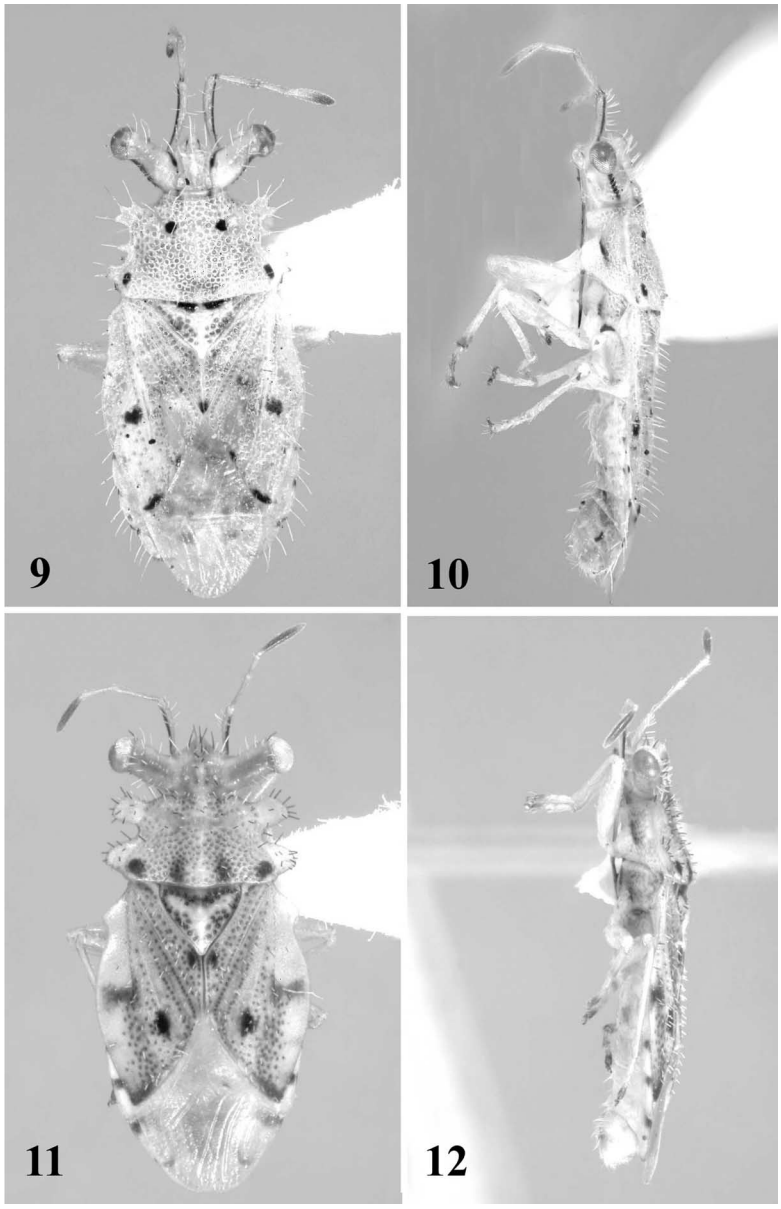
Epipolops meridionalis Piran 1958: 57 (n. sp.), Canter 1964: 64 (key, fig.), Slater 1964: 417 (cat.). Synonymized by Brailovsky 1990: 128.

Specimens examined

BOLIVIA: 1 ♂, Apolo, N. La Paz, 5–15.viii.1989, L.E. Peña (USNM); 4 ♂♂, 1 ♀, Rio Coroico, 1200 m, La Paz, 24–26.xi.1984, L.E. Peña (USNM); 1 ♂, Mataral (N) V. Grande, 1800–2000 m, 15–17.xii.1984, L.E. Peña (USNM). **BRAZIL:** 13 ♂♂, 6 ♀♀, Distrito Federal, 32 km N of Brasilia, 15°35′S, 47°42′W, 1000 m, 21.xi.1997, T.J. Henry (USNM); 2 ♂♂,

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 9–12. Photographs of *Epipolops* spp. *Epipolops frondosus*: 9, dorsal aspect; 10, lateral aspect. *Epipolops kathrynae*: 11, dorsal aspect; 12, lateral aspect.



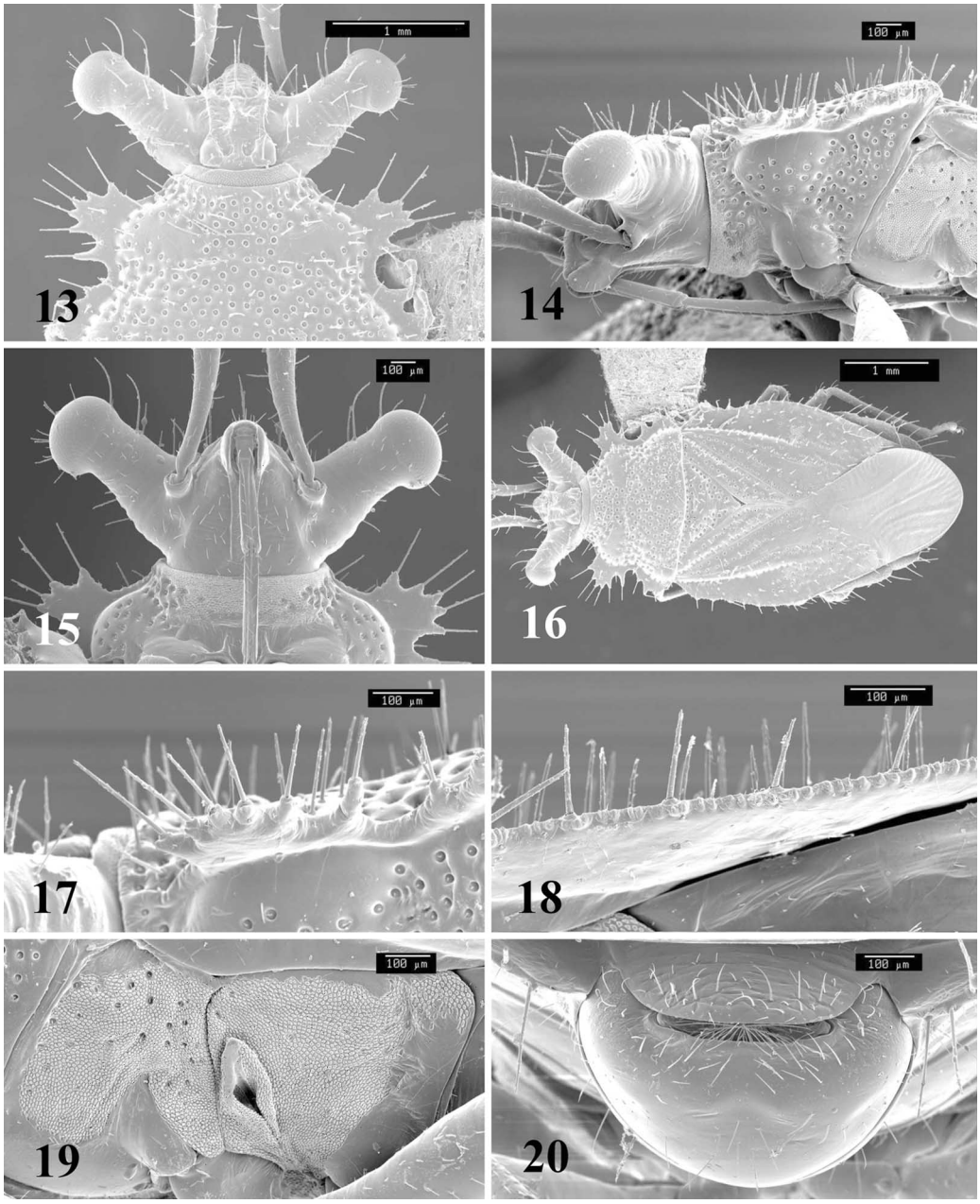
Distrito Federal, 2 km W of Brasilia, 10.xi.1997, T.J. Henry (USNM); 1 ♂, Minas Gerais, 17 km SW of Cardeal Mota, 19°24′S, 43°44′W, 6.xi.1997, T.J. Henry (USNM); 1 ♂, Minas Gerais, Viçosa, 11.iii.1985, P.S. Fiuza F. (USNM); 1 ♀, Minas Gerais, 20 km NE of Diamantina, Br. Rd. 376, 18°25′S, 43°31′W, 8.xi.1997, T.J. Henry and A. Paula (USNM); 2 ♂♂, 1 ♀, Paraná, Curitiba, 19–27.xi.1985, T.J. Henry (USNM); 1 ♀, Nova Teutonia, Santa Catarina, 9.x.1948, F. Plaumann (USNM). **PARAGUAY:** 1 ♀, Horqueta, 22°24′N, 57°10′W, 44 km W of Paraguay River, 26.iv.1933, Alberto Schulze (USNM); 1 ♀, Inst. Agr. Nac., Caacupe, Depto. Cordillera, 25.viii.1980, R.D. Cave (USNM).

Diagnosis

This species is distinguished by the setigerous, multipointed lateral processes on the anterior and posterior pronotal lobes (Figs. 9, 13, 57) and the

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 13–20. Scanning electron micrographs of *Epipolops frondosus*: 13, head and pronotum, dorsal aspect (29.7×); 14, head and pronotum, lateral aspect (57×); 15, head, ventral aspect; 16, head, pronotum, hemelytra, dorsal aspect (19×); 17, pronotal setae (134.4×); 18, hemelytral setae (167.3×); 19, metathoracic ostiolar area (100.6×); 20, genital capsule, caudal aspect (110.4×).



numerous dark brown spots on the dorsum, including one on each callus, one at each humeral angle, two at the base of the scutellum, one at the apex of the clavus, and one at the inner margin, middle, and apex of the corium (Fig. 9).

Description

Male (n = 10): length 3.80–4.25 mm, width 1.79–1.80 mm. **Head:** length 0.56–0.57 mm, basal width 0.56–0.57 mm, width across eyes 1.37–1.44 mm, length from outer margin of

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

ocellus to apex of eye 0.65–0.69 mm. **Labium:** length 1.50–1.52 mm, extending to bases of mesocoxae. **Antenna:** length of segment I, 0.65–0.69 mm; II, 0.42–0.43 mm; III, 0.27–0.30 mm; IV, 0.47–0.49 mm. **Pronotum:** length 0.85–0.90 mm, basal width 1.38–1.42 mm.

Female (n = 5): length 3.85–4.40 mm, width 1.74–2.10 mm. **Head:** length 0.64–0.70 mm, basal width 0.53–0.57 mm, width across eyes 1.41–1.56 mm, length from outer margin of ocellus to apex of eye 0.74–0.75 mm. **Labium:** length 1.50–1.55 mm, extending to bases of mesocoxae. **Antenna:** length of segment I, 0.62–0.74 mm; II, 0.38–0.43 mm; III, 0.29–0.31 mm; IV, 0.44–0.52 mm. **Pronotum:** length 0.86–0.94 mm; basal width 1.37–1.52 mm.

Coloration: overall pale yellowish brown with various fuscous spots and fine lines. Head yellowish brown; eyes and ocelli red; eye stalk with a narrow fuscous line along posterior face and a slightly thicker line around base and extending as a very fine line onto anterior face. Antenna uniformly yellowish brown; segment I with a fine brown dorsal line on posterior face. Pronotum yellowish brown, with a dark brown spot on each callus and at each humeral angle; scutellum with two dark brown or fuscous spots at base, spots sometimes partially merging, transverse and median carinae pale yellow. Hemelytron variably spotted with dark brown; minimum complement with a brown spot at apex of clavus and at middle and apex of corium; maximum complement with a brown spot at apex of clavus and one on basal third and middle, and two along margin bordering membrane. Ventral surface with a brown or fuscous spot on side of prothorax, side of abdominal segments III–IV, V, VI, and VII, and variously at anterior or posterior corners of some abdominal segments. Legs uniformly pale.

Structure and vestiture: head impunctate, transversely rugose around eye stalks, with long, erect, scattered, simple, pale setae on vertex, frons, and eye stalks and slightly shorter, erect setae on eye facets. Inner margin of antennal segment I with 8 or more long, erect, simple setae about 1.5 times as long as diameter of segment. Pronotum evenly punctate; clothed with long, erect, simple, pale setae; lateral margins of anterior and posterior pronotal lobes with multipointed processes, each ending in a long, pale seta; scutellum punctate, except for central, transverse, median carinae. Hemelytron punctate on clavus, three rows on corium, and distal third of expanded costa; lateral margin finely crenulate, broadly convex, and slightly narrowed before base; dorsum and basal half of lateral margins with scattered long, simple, pale setae. Lateral margins of abdominal segments V, VI, and VII each with 6–8 long, pale, simple setae.

Host

Unknown.

Distribution

Described from Brazil (Amazonas) (Herrich-Schaeffer 1850) and later reported from Argentina (as junior synonym *E. meridionalis* Piran) (Brailovsky 1990) and Paraguay (Slater 1998). Canter (1964) gave new records for the Brazilian states of Goias, Mato Grosso, and Minas Gerais. Bolivia is a new country record.

Epipolops kathrynae sp. nov.

(Figs. 11–12, 21–28, 58, 72)

Type specimens

Holotype: ♂, Ecuador, Orellana Prov. (previously Napo), Tiputini Biodiversity Station, 216 m, 37°55′S, 76°08′39″W, 5.ii.2002, T.J. Henry and P.S.F. Ferreira, *ex Cecropia* sp. (terminal stems) (Cecropiaceae) along river (held in trust at USNM). **Paratypes:** 4 ♂♂, 8 ♀♀, same data as for holotype (USNM); 1 ♂, 2 ♀♀, Orellana Prov. (previously Napo), Reserva Ethnica Waorani, 38 km south of Pompeya, 39°10′S, 76°26′W, 2–14.ii.1996, T.J. Henry (USNM).

Etymology

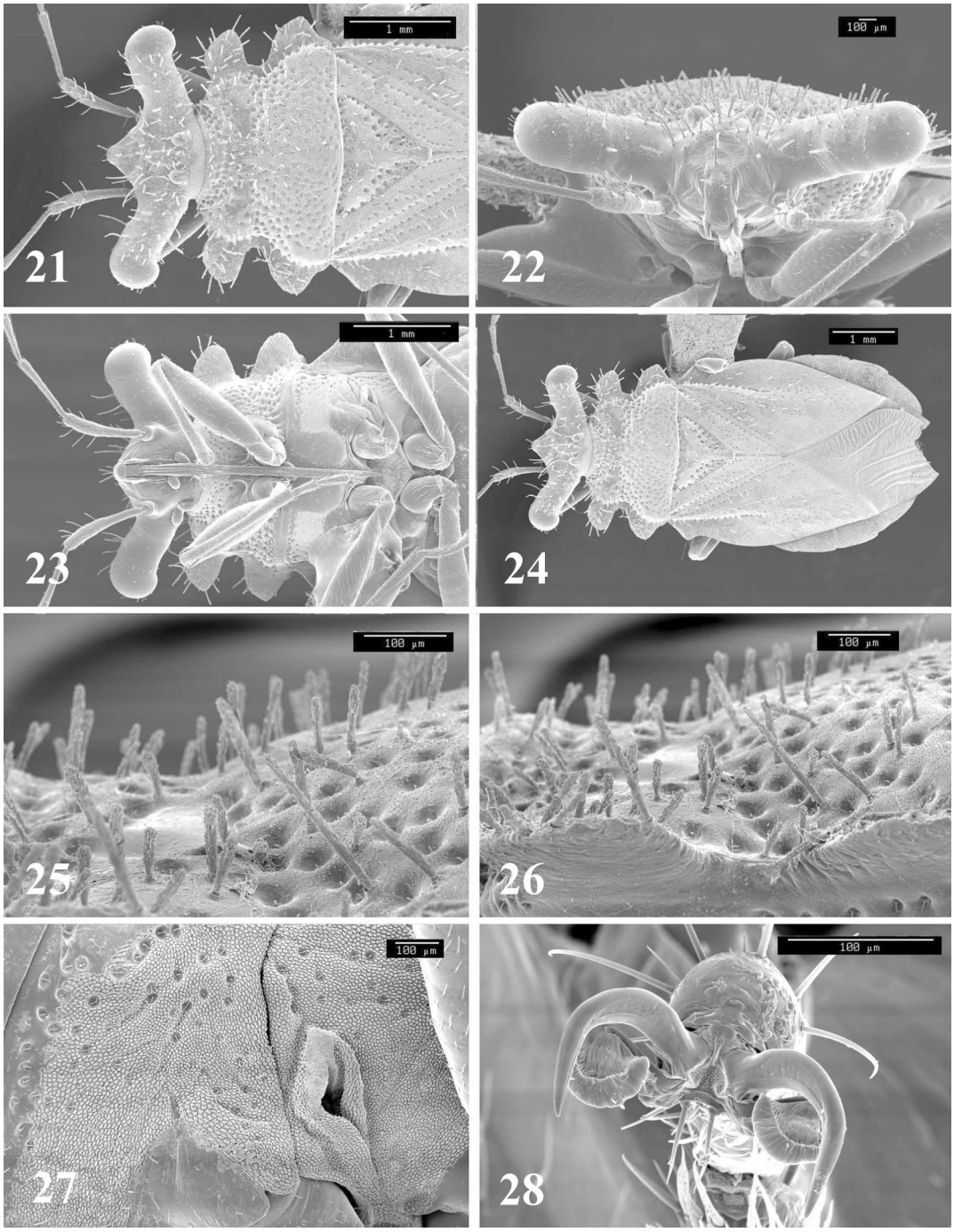
Named in honor of my wife, Kathryn Henderson Henry, for her unfailing support of my passion for studying Heteroptera.

Diagnosis

This is the largest, most robust member of the genus. It is recognized by the large, broad form (Figs. 11, 24); the stout, spatulate lateral processes on the anterior and posterior pronotal lobes (Figs. 21, 58); the small toothlike process at the base of the hemelytron (Figs. 24, 72); the short, stout, all black mixed with all white dorsal setae (Figs. 11, 12); the fuscous spot at each humeral angle; the fuscous spots at the inner angle of the clavus, middle of subcostal area,

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 21–28. Scanning electron micrographs of *Epipolops kathrynae*: 21, head and pronotum, dorsal aspect (24.5×); 22, head and pronotum, frontal aspect (40.9×); 23, head, ventral aspect (26.7×); 24, head, pronotum, and hemelytra, dorsal aspect (14.6×); 25, barbed pronotal setae (188.7×); 26, barbed hemelytral setae (320.4×); 27, metathoracic ostiolar area (99.7×); 28, claw (332.9×).



https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

discal area, and apical margin of the corium; and the brown-stained hemelytral punctures (Fig. 11).

Description

Male (n = 6; holotype measurement first): length 4.65–4.85 mm, width 2.32–2.50 mm. **Head:** length 0.65–0.68 mm, basal width 0.60–0.66 mm, width across eyes 1.98–2.00 mm, length from ocellus to outer margin of eye 0.86–0.88 mm. **Labium:** length 1.76–1.94 mm, extending just past mesocoxae to middle of metasternum. **Antenna:** length of segment I, 0.61–0.65 mm; II, 0.56–0.59 mm; III, 0.35–0.39 mm; IV, 0.61–0.62 mm. **Pronotum:** length 0.98–1.00 mm, basal width 1.66–1.68 mm.

Female (n = 10): length 4.70–5.40 mm, width 2.38–2.60 mm. **Head:** length 0.67–0.70 mm, basal width 0.64–0.66 mm, width across eyes 2.02–2.24 mm, length from ocellus to outer margin of eye 0.84–0.94 mm. **Labium:** length 2.06–2.28 mm, extending to middle of metasternum. **Antenna:** length of segment I, 0.64–0.69 mm; II, 0.57–0.62 mm; III, 0.36–0.38 mm; IV, 0.62–0.64 mm. **Pronotum:** length 0.99–1.17 mm, basal width 1.68– 1.94 mm.

Coloration: overall dull yellowish brown, with dark brown marks and spots. Head yellowish brown; apex of clypeus narrowly brown to fuscous; eyes and ocelli red. Antenna yellowish brown; posterior face of segment I with narrow brown line; segment IV uniformly dark brown to fuscous. Pronotum yellowish brown, with a large dark brown spot at each posterior angle and an indistinct brown spot on either side of meson at base; scutellum yellowish brown, median carina paler, punctures and narrow basal margin dark brown. Hemelytron yellow to golden brown, with a spot at middle of clavus, middle of corium, and middle of costal margin, a broad line at apex of corium, and punctures dark brown; membrane translucent brown. Connexivum yellowish brown, with a brown streak across anterior margin of each visible segment and across posterior margin of last visible segment. Ventral surface largely yellowish brown, with meso- and meta-sternum, a narrow streak on the propleura, a spot on the meso- and meta-pleura, and a spot on the anterior margin of abdominal segments V–VII dark brown or fuscous. Legs uniformly yellowish brown.

Structure and vestiture: head smooth, dull, lacking rugosities on eye stalks; median carina shallow and indistinct; clothed with short, erect, rodlike, all white setae intermixed with a few all black setae. Pronotum uniformly punctate except for narrow, shiny, impunctate area across calli; anterior lobe with a relatively long, broad, distally rounded or spatulate process; posterior lobe with short, broad spatulate process; clothed with short, rodlike, all white setae intermixed mostly on lateral processes with all black setae. Hemelytron laterally weakly convex, narrowed distally, exposing last three to four connexival segments, marginally smooth, and with a weak toothlike process at base; clothed with short, rodlike, all white setae intermixed with only a few all black setae.

Hosts

Nymphs and adults were common on the terminal stems of a species of *Cecropia* growing along the Rio Tiputini, Ecuador. The river was flooded approximately 5 m above normal level, which appeared to concentrate the bugs on the 2–4 m of stems exposed above the waterline (collections made by boat).

Distribution

Known only from Orellana Province, Ecuador.

Epipolops lenkoi Canter, 1964

(Figs. 29, 30, 59*a*–59*c*, 73)

Epipolops lenkoi Canter 1964: 65 (n. sp., key); Brailovsky 1990: 132 (key, figs.), Slater and O'Donnell 1995: 72 (cat.), Slater 1998: 67 (key).

Specimens examined

ECUADOR: 5 ♂♂, 9 ♀♀, Macara-Catacocha, 400–500 m, 14–15.viii.1971, L.E. Peña G. (USNM).

Diagnosis

This species is most similar to *E. arboricolus* in lacking short, sharp tubercles at the anterior or posterior angles of the pronotum (Figs. 59*a*–59*c*) and a toothlike process at the base of the hemelytron (Fig. 73), but differs in having multiple spots on the dorsum (Fig. 29) and the more slender lateral pronotal processes (Figs. 29, 59*a*–59*c*) that are not marginally serrate or crenulate. Canter (1964) indicated that *E. lenkoi* was close to *E. mucronatus* and *E. quadrispinus*, but both of these species, unlike *E. lenkoi* (Fig. 68), possess a toothlike process on the basal margin of the hemelytron.

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Description

Male (n = 5): length 3.92–4.16 mm, width 1.66–1.78 mm. **Head:** length 0.48–0.53 mm, basal width 0.48–0.51 mm, width across eyes 1.36–1.42 mm, length from ocellus to outer margin of eye 0.59–0.68 mm. **Labium:** length 1.50–1.54, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.65–0.66 mm; II, 0.48 mm; III, 0.33–0.35 mm; IV, 0.44–0.48 mm. **Pronotum:** length 0.85–0.88 mm, basal width 1.25–1.26 mm.

Female (n = 5): length 4.08–4.48 mm, width 1.92–2.00 mm. **Head:** length 0.48–0.54 mm, basal width 0.53–0.54 mm, width across eyes 1.39–1.44 mm, length from ocellus to outer margin of eye 0.62–0.69 mm. **Labium:** length 1.52–1.56, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.64–0.67 mm; II, 0.45–0.53 mm; III, 0.32–0.35 mm; IV, 0.43–0.48 mm. **Pronotum:** length 0.86–0.91 mm, basal width 1.30–1.34 mm.

Coloration: overall yellowish brown, with brown spots on the pronotum and hemelytra. Head yellowish brown, lacking distinct brown line on posterior aspect of eye stalk, basal area behind each ocellus sometimes dark brown; eyes and ocelli reddish. Antenna uniformly pale yellow, with only the apex of segment IV sometimes darker brown. Pronotum yellowish brown, with a small brown spot on each callus and on each bluntly tuberculate humeral angle; dark brown basally, yellowish brown distally, and pale yellow or white on transverse and median carinae. Hemelytron translucent yellowish brown, with spot at inner angle of clavus and middle of corium and narrow distal area of corium bordering membrane dark brown. Ventral surface and legs yellowish brown; only mesopleural area of thorax with a few dark brown punctures.

Structure and vestiture: head impunctate, with distinct median carina extending from between ocelli to base of clypeus; eye stalks weakly rugose, clothed with long, slender, erect, pale, simple setae on vertex, frons, and eye stalks; eye facets with only very short, fine setae. Pronotum evenly punctate, except for smooth area across calli; clothed with long, erect, simple setae, including lateral processes; process on anterior lobe slender, relatively straight, and slightly widened distally before more acute apex; process on posterior lobe relatively short, slender, distally acute, and recurved, but sometimes stouter, forming a more thickened, truncate apical knob; each humeral angle with a short, blunt, dorsal tubercle. Hemelytron laterally very finely crenulate, convex, then weakly concave before truncated base; clavus and central area of corium with scattered, long, erect, simple setae. Abdomen with scattered, short to long, erect and semierect simple setae, especially along midline of female.

Host

Unknown.

Distribution

Described and previously known only from Brazil (Mato Grosso) (Canter 1964). Ecuador is a new country record.

Discussion

Because of current problems with borrowing specimens from Brazil, I have not been able to obtain the holotype of *E. lenkoi*. Based on the original description and figures provided by Canter (1964), however, I am reasonably confident that I have correctly associated my specimens from Ecuador with this species. The shape of the lateral process on the posterior lobe of this species varies from relatively stout, similar to that figured by Canter (1964), to more slender and recurved, as shown in Figure 55*b*. Most of the specimens from Ecuador listed below have a more slender process.

Epipolops mucronatus (Distant, 1893)

(Figs. 31, 32, 60, 74)

Enicscoa mucronatus Distant 1893: 389 (n. sp.).
Epipolops mucronatus: Lethierry and Severin 1894: 168 (cat.), Canter 1964: 64 (key, note), Slater 1964: 417 (cat.), Brailovsky 1990: 132 (key, figs.; in part), Slater 1998: 67 (key; in part).

Type specimen examined

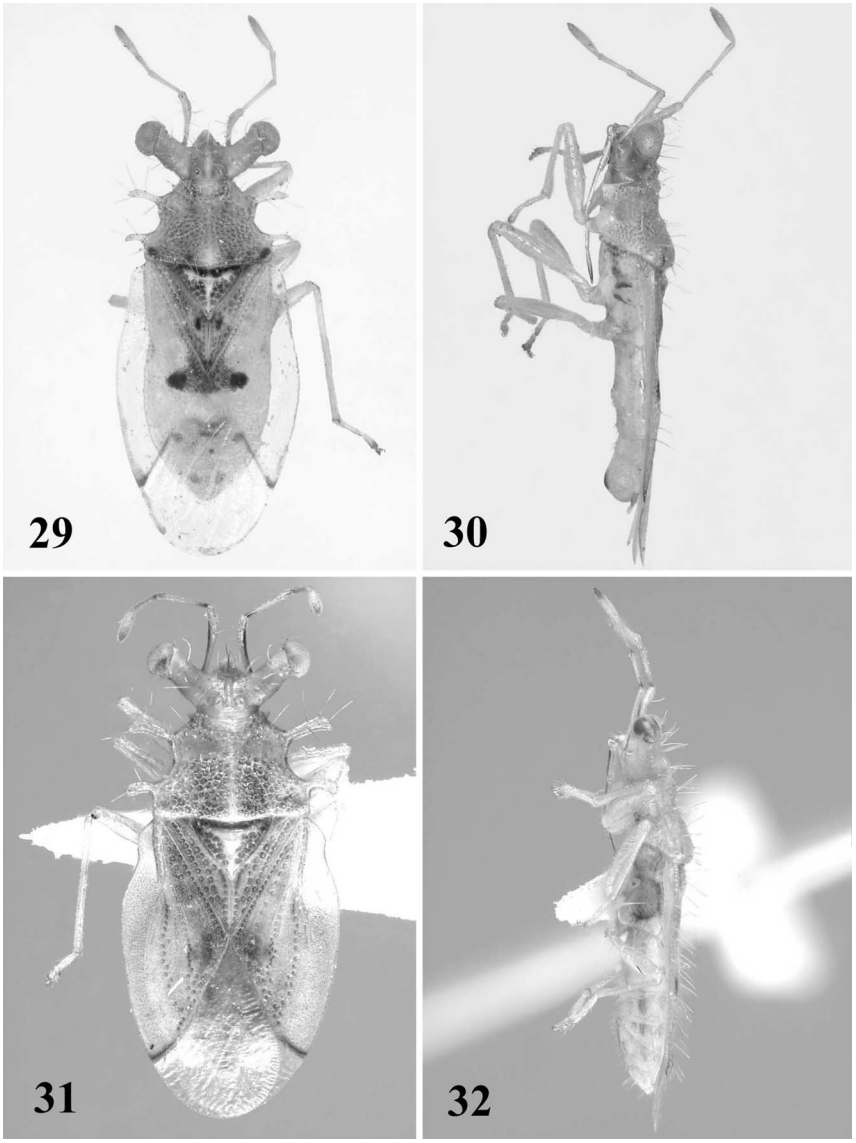
Holotype ♂: label 1 (circular with an orange ring), "Type"; label 2, "Bugaba [Panama], 800–1500 ft., Champion"; label 3, "sp. figured"; label 4, "B. C. A., Hem.I., Enciscoa [handwritten] mucronatus"; label 5 [handwritten], "Enciscoa mucronatus Dist." (BMNH).

Diagnosis

This species can be distinguished by the small size, the acute lateral spine on the posterior pronotal lobe (Figs. 31, 60), the lack of a

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 29–32. Photographs of *Epipolops* spp. *Epipolops lenkoi*: 29, dorsal aspect; 30, lateral aspect. *Epipolops mucronatus* (holotype): 31, dorsal aspect; 32, lateral aspect.



short tubercle on the anterolateral or posterolateral angles of the pronotum, and the presence of long marginal setae and a short toothlike tubercle (Fig. 74) at the base of each hemelytron.

Description

Male (holotype): length 3.49 mm, width 1.60 mm. **Head:** length 0.46 mm, basal width 0.51 mm, width across eyes 1.26 mm, length from ocellus to outer margin of eye 0.61 mm. **Labium:** length about 1.34 mm (obscured under body on card), extending to middle of mesocoxae. **Antenna:** length of segment I, 0.62 mm; II, 0.43 mm; III, 0.33 mm; IV, 0.47 mm. **Pronotum:** length 0.82 mm, basal width 1.24 mm.

Coloration: overall shiny yellowish brown. Head uniformly yellowish brown; eyes and ocelli faded red (probably darker reddish brown when alive). Antenna yellowish brown, with segments III and IV and apex of segment II darker brown; segment I with a narrow brown line on posterior face. Pronotum yellowish

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

brown, with a darker brown spot at each posterior angle of hind lobe. Scutellum yellowish brown; median and transverse carina more yellow. Hemelytron yellowish brown, middle of corium with a dull, slightly darker brown spot and distal margin bordering membrane dark brown. Ventral surface yellowish brown, some punctures on pleural areas of thorax slightly darker brown; anterior corner of each abdominal segment with a small brown blotch.

Structure and vestiture: head impunctate; eye stalks largely smooth, weakly rugose only at bases; meson with a distinct, narrow carina extending from between ocelli to base of clypeus; frons, vertex, and inner margins of eye stalks with long, slender, pale setae subequal to diameter of eye stalks. Pronotum with large, evenly spaced punctures, except across broad, smooth area of calli; process on anterior lobe slender, straight, and distally rounded; process on posterior lobe slender, distally acute, and curved posteriorly; uniformly clothed with long, erect, slender setae on both lobes and lateral processes; scutellum with large, deep punctures, except on median and transverse carinae. Hemelytron laterally weakly convex, finely crenulate, and weakly convex before ending at an angle near base; clavus and inner margin of corium with large, deep punctures; sparsely but evenly clothed with long, erect setae on clavus and corium and along basal half of costal margin.

Host

Unknown.

Distribution

Described and known only from Panama (Distant 1893).

Epipolops oculuscanri (DeGeer, 1773)

(Figs. 33, 34, 61, 75)

Cimex oculus-canri De Geer 1773: 343 (n. sp.).
Haemus oculus-canri: Stål 1862: 312 (n. comb.).
Enciscoa inermis Distant 1893: 389 (n. sp.). Synonymized by Bergroth 1893: 225.
Epipolops oculuscanri: Lethierry and Severin 1894: 168 (cat.), Canter 1964: 64 (key, note), Slater 1964: 417 (cat.), Brailovsky 1990: 132 (key, figs.), Slater 1998: 65 (distr., key).

Specimens examined

BRAZIL: 2 ♀♀, Distrito Federal, 32 km N of Brasilia, 15°35′S, 47°42′W, 1000 m, 21.xi.1997, T.J. Henry (USNM). **COLOMBIA:** 1 ♀, Anapoima (Cundinamarca), 14.viii.1965 (USNM). **COSTA RICA:** 1 ♂, Alajuela, 18.i.1936, B.H. Ballou, taken on *Psidium guajava* L. (USNM). **GUYANA** (British Guyana): 1 ♂, Botanical Garden, Georgetown, 26.ix.1918, Harold Morrison (USNM). **MEXICO:** 1 ♀, Nuevo Leon, Santiago, 18.ii.1994, K. Esav, taken in McPhail fruitfly trap (USNM); 1 ♂, Mexico, 3 km S of Ixtapan de la Sol, 1725 m, 20.xi.2003, 18°49.6′N, 99°42.7′W, T.J. Henry, H. Brailosvky, and L. Cervantes, taken on *Heliocarpus terebinthinaceus* Hochr. (USNM).

Diagnosis

This species, the easiest member of the genus to recognize, is distinguished by the smooth margins of the pronotum (Figs. 33, 61), lacking lateral processes or multiple spines.

Description

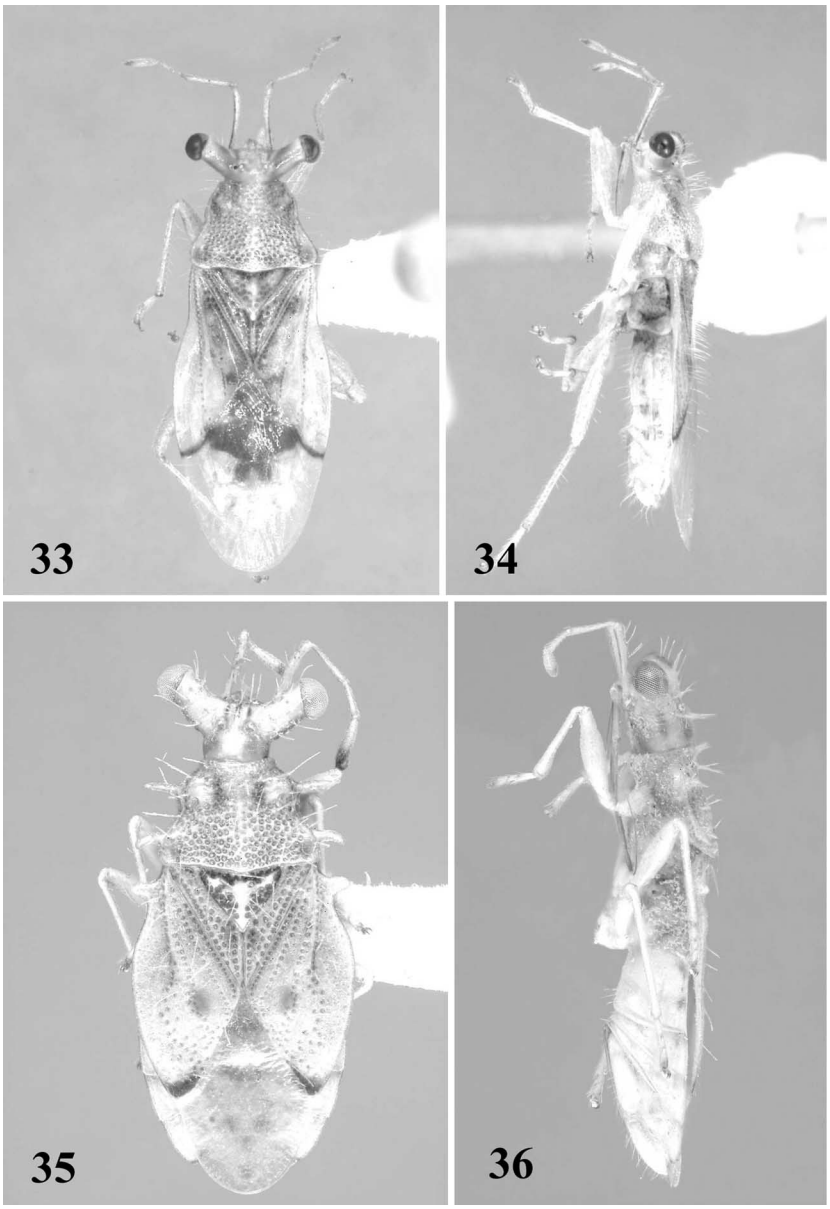
Male (n = 2): length 4.65–5.12 mm, width 1.62–1.98 mm. **Head:** length 0.53–0.61 mm, basal width 0.59–0.67 mm, width across eyes 1.48–1.50 mm, length from ocellus to outer margin of eye 0.61–0.62 mm. **Labium:** length about 1.67–1.92 mm, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.77–0.78 mm; II, 0.57–0.64 mm; III, 0.42–0.48 mm; IV, 0.51–0.55 mm. **Pronotum:** length 0.98–1.06 mm, basal width 1.42–1.62 mm.

Female (n = 2): length 4.65–5.10 mm, width 1.76–1.86 mm. **Head:** length 0.55–0.59 mm, basal width 0.62–0.65 mm, width across eyes 1.49–1.63 mm, length from ocellus to outer margin of eye 0.64–0.67 mm. **Labium:** length about 1.60–1.80 mm, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.82–0.87 mm; II, 0.47–0.55 mm; III, 0.40–0.48 mm; IV, 0.51–0.55 mm. **Pronotum:** length 1.00–1.09 mm, basal width 1.52–1.58 mm.

Coloration: overall yellowish brown, usually with only a few brown or red marks but sometimes with more extensive dark shading and spots. Head yellowish brown, sometimes extensively infuscated on eye stalks and grooved areas of frons and vertex; eyes and ocelli reddish. Pronotum uniformly yellowish brown, sometimes with brown spots at anterior and humeral angles and more reddish brown spots near

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 33–36. Photographs of *Epipolops* spp. *Epipolops oculuscanri*: 33, dorsal aspect; 34, lateral aspect. *Epipolops quadrispinus*: 35, dorsal aspect; 36, lateral aspect.



middle behind calli and at base on either side of median line; scutellum yellowish brown, darker brown along base, sometimes with brown or reddish brown lines on either side of meson. Hemelytron usually yellowish brown, with apex of clavus and narrow apical margin of corium dark brown, sometimes with dark spots at inner margin of clavus and middle of corium; membrane transparent with four or five narrow brown streaks distally between veins. Ventral surface yellowish brown, sometimes with a brown blotch at middle of mesopleuron and laterally on abdominal segments. Legs yellowish brown, with a subapical brown spot on posterior face of femora, spots sometimes indistinct, particularly on pro- and meso-femora.

Structure and vestiture: head impunctate, lacking distinct rugosities on eye stalks; median carina on vertex and frons indistinct; clothed with long, erect, pale, slender setae, some

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

nearly as long as diameter of eye stalks. Pronotum evenly and relatively finely punctate, except narrowly across shiny, smooth calli; lateral margin weakly constricted between lobes, anterior and posterior lobes lacking lateral processes or multipointed spines; scutellum largely impunctate along mesal and transverse carinae; with long, erect, pale, slender setae. Hemelytron translucent, with two rows of punctures on clavus and three rows on corium; clothed with long, erect, simple, pale setae dorsally and along lateral margin.

Hosts

Taken on *Psidium guajava* L. (Myrtaceae) in Costa Rica; intercepted at Laredo, Texas, on orchids from Mexico; and collected on *Heliocarpus terebinthinaceus* Hochr. (Tiliaceae) in Mexico.

Distribution

Described from "Guyana" and later reported from Panama (Stål 1862); Costa Rica, Guatemala, and Mexico (Slater 1964); Brazil (Minas Gerais) and Suriname (Canter 1964); and British Guiana (Slater 1998). Colombia is a new country record.

Epipolops quadrispinus Stål, 1874

(Figs. 35, 36, 62, 76)

Epipolops quadrispinus Stål 1874: 134 (n. sp.), Lethierry and Severin 1894: 168 (cat.), Canter 1964: 64 (key, note), Slater 1964: 418 (cat.), Brailovsky 1990: 132 (key, figs.), Slater 1998: 67 (key).

Specimens examined

COLOMBIA: 1 ♂, 2 ♀♀, Cnd, El Colegio, 6.vi.1946, E.A. Chapin (USNM).

Diagnosis

This species is distinguished by the slender, recurving, distally acute posterior pronotal spine (Figs. 33, 62); the large lateral toothlike process at the base of the hemelytron (Fig. 76); and the pale orange–brown spot at the middle of the corium (Fig. 35).

Description

Male (n = 1): length 3.60 mm, width 1.47 mm. **Head:** length 0.57 mm, basal width 0.49 mm, width across eyes 1.47 mm, length from ocellus to outer margin of eye 0.61 mm. **Labium:** length about 1.46 mm, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.57 mm; II, 0.35 mm; III, 0.22 mm; IV, 0.39 mm. **Pronotum:** length 0.79 mm, basal width 1.20 mm.

Female (n = 2): length 4.08–4.16 mm, width 1.85–1.89 mm. **Head:** length 0.61–0.67 mm, basal width 0.53 mm, width across eyes 1.41–1.49 mm, length from ocellus to outer margin of eye 0.61–0.67 mm. **Labium:** length 1.60–1.63 mm, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.65–0.69 mm; II, 0.44–0.45 mm; III, 0.29 mm; IV, 0.46–0.48 mm. **Pronotum:** length 0.86–0.91 mm, basal width 1.30–1.41 mm.

Coloration: overall yellowish brown. Head yellowish brown with a faint brown line on posterior face of eye stalk and a narrow dark brown line on either side of median carina. Antenna yellowish brown; segment I lacking narrow brown line; apices of segments II and III sometimes narrowly brown; segment IV dark brown on distal third. Pronotum yellowish brown, with a faint brown spot at middle of each callus and at each humeral angle; scutellum yellowish brown. Hemelytron yellowish brown; corium with an orange–brown spot at middle and narrowly brown to reddish brown along distal margin bordering membrane. Ventral surface and legs pale yellowish brown.

Structure and vestiture: head impunctate, eye stalks without or with only indistinct transverse rugosities; with long, slender, pale setae, some subequal to diameter of eye stalks. Pronotum evenly and relatively finely punctate, except for shiny, quadrate areas of calli; lateral process on anterior lobe slender, straight, and distally acute or pointed; lateral process on posterior lobe slender, curving caudally, and distally weakly pointed; clothed with long, erect, pale setae. Hemelytron opaque; marginally convex, smooth, with a large toothlike tubercle at base; clavus with two or three rows of punctures, corium with one or two rows bordering claval commissure and veins; clothed with long, erect, slender setae.

Host

Unknown.

Distribution

Described and known only from Colombia (Stål 1874).

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Epipolops rettenmeyeri Slater, 1998

(Figs. 37, 38, 41–48, 63, 77)

Epipolops rettenmeyeri Slater 1998: 64 (n. sp., key).

Specimens examined

ECUADOR: 4 ♂♂, 6 ♀♀, Orellana Prov. (previously Napo), Reserva Ethnica Waorani, 1 km S of Oncone Gare Camp, Trans. Ent., 39°10′S, 76°26′W, 12.ii.1995, 2–3.x.1996, and 5.ii.1999, T.L. Erwin *et al.*, insecticidal fogging of mostly bare green leaves, with some covering of lichenous or bryophytic plants, transect 6 (USNM); 1 ♂, 2 ♀♀, Orellana Prov. (previously Napo), Tiputini Biodiversity Station, 216 m, 37°55′S, 76°08′39″W, 27.x.1998, insecticidal fogging of mostly bare green leaves, with some covering of lichenous or bryophytic plants, lot 1956, transect T-6 (USNM). **PERU:** 2 ♂♂, 1 ♀, Madre de Dios, Rio Tambopata Res., 30 km (air) SW of Puerto Maldonado, 290 m, 12°50′S, 69°17′W, 10.xi.1983 and 30.iv.1984, Smithsonian Canopy Fogging Project, T.L. Erwin *et al.* (USNM).

Diagnosis

Epipolops rettenmeyeri is most easily distinguished by the row of small tubercles on the posterior face of each eye stalk; the forward-curving lateral pronotal processes, one of which is distally spatulate and the other marginally crenulate (Figs. 37, 44, 63); the transverse brown blotch on the middle margin of the corium (Fig. 37); and the lack of a toothlike process at the base of the hemelytron (Fig. 77).

Description

Male (n = 2): length 4.16–4.68 mm, width 2.06–2.34 mm. **Head:** length 0.58–0.61 mm, basal width 0.56–0.58 mm, width across eyes 1.60–1.64 mm, length from ocellus to outer margin of eye 0.72–0.80 mm. **Labium:** length about 1.58–1.65 mm, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.69–0.74 mm; II, 0.51–0.53 mm; III, 0.32–0.35 mm; IV, 0.53–0.54 mm. **Pronotum:** length 0.90–1.04 mm, basal width 1.41–1.62 mm.

Female (n = 2): length 4.56–4.95 mm, width 2.30–2.43 mm. **Head:** length 0.54–0.64 mm, basal width 0.59–0.62 mm, width across eyes 1.62–1.71 mm, length from ocellus to outer margin of eye 0.82–0.83 mm. **Labium:** length 1.73–1.85 mm, extending to middle of mesocoxae. **Antenna:** length of segment I, 0.74–0.83 mm; II, 0.51–0.57 mm; III, 0.37–0.39 mm; IV, 0.56–0.57 mm. **Pronotum:** length 0.99–1.17 mm, basal width 1.53–1.73 mm.

Coloration: overall yellowish brown. Head yellowish brown, with a narrow dark brown line on posterior face of each eye stalk. Antenna yellowish brown; narrow line on posterior face of segment I, narrow annulus at apex of segment II and base of segment III, and distal half of segment IV dark brown. Pronotum uniformly yellowish brown with a dark brown spot at each humeral angle; scutellum yellowish brown with two dark brown spots or blotches along base. Hemelytron yellowish brown, with transverse streak through middle of costal region and narrow distal margin of corium dark brown; membrane transparent with a dark brown streak through middle. Ventral surface yellowish brown with a dark brown spot at middle of pro-, meso-, and meta-pleura and laterally on abdominal segments II, III, IV, and VII.

Structure and vestiture: head impunctate, eye stalk weakly transversely rugose, with a row of five or six small tubercles along posterior margin visible from dorsal aspect; median carina distinct but narrow, with shallow groove on either side. Pronotum evenly punctured, except along meson and across smooth, shiny areas of calli; lateral process on anterior lobe slender, curved forward, and distally spatulate; lateral process on posterior lobe shorter, stouter, coarsely crenulate, and distally rounded. Hemelytron translucent, more opaque on inner area of corium and clavus; marginally convex, finely crenulate, and lacking a toothlike process at base; clavus with three rows of punctures; corium with a row of punctures along claval commissure and along each vein.

Host

Unknown.

Distribution

Described and known only from Ecuador and Peru (Slater 1998).

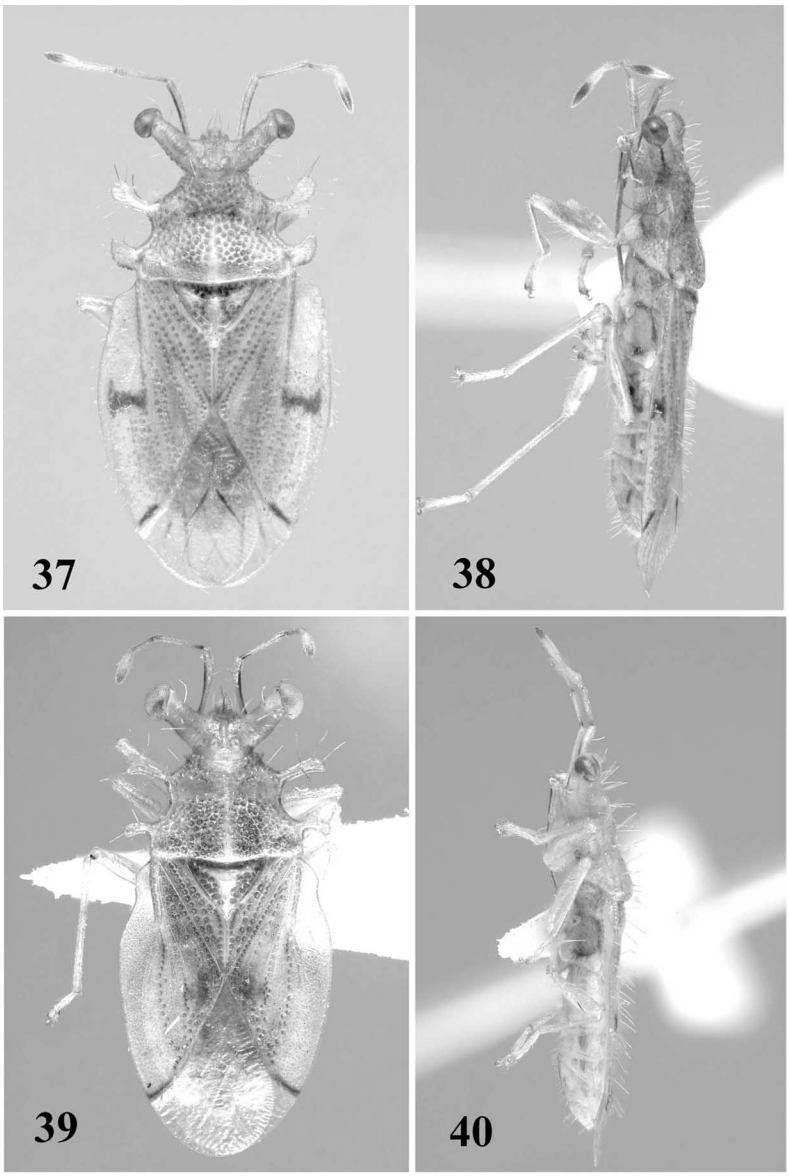
Epipolops scudderi sp. nov.

(Figs. 39, 40, 64, 78)

Epipolops mucronatus: Brailovsky 1990: 132 (key, figs.); Slater 1998: 67 (key).

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 37–40. Photographs of *Epipolops* spp. *Epipolops rettenmeyeri*: 37, dorsal aspect; 38, lateral aspect. *Epipolops scudderi*: 39, dorsal aspect; 40, lateral aspect.



Type specimens

Holotype: ♂, Panama, Colón Prov., Ft. Sherman, 15.vi.1999, Y. Basset, taken on *Pourouma bicolor* (USNM). **Paratypes:** 1 ♂, 3 ♀♀, same data as for holotype (USNM).

Etymology

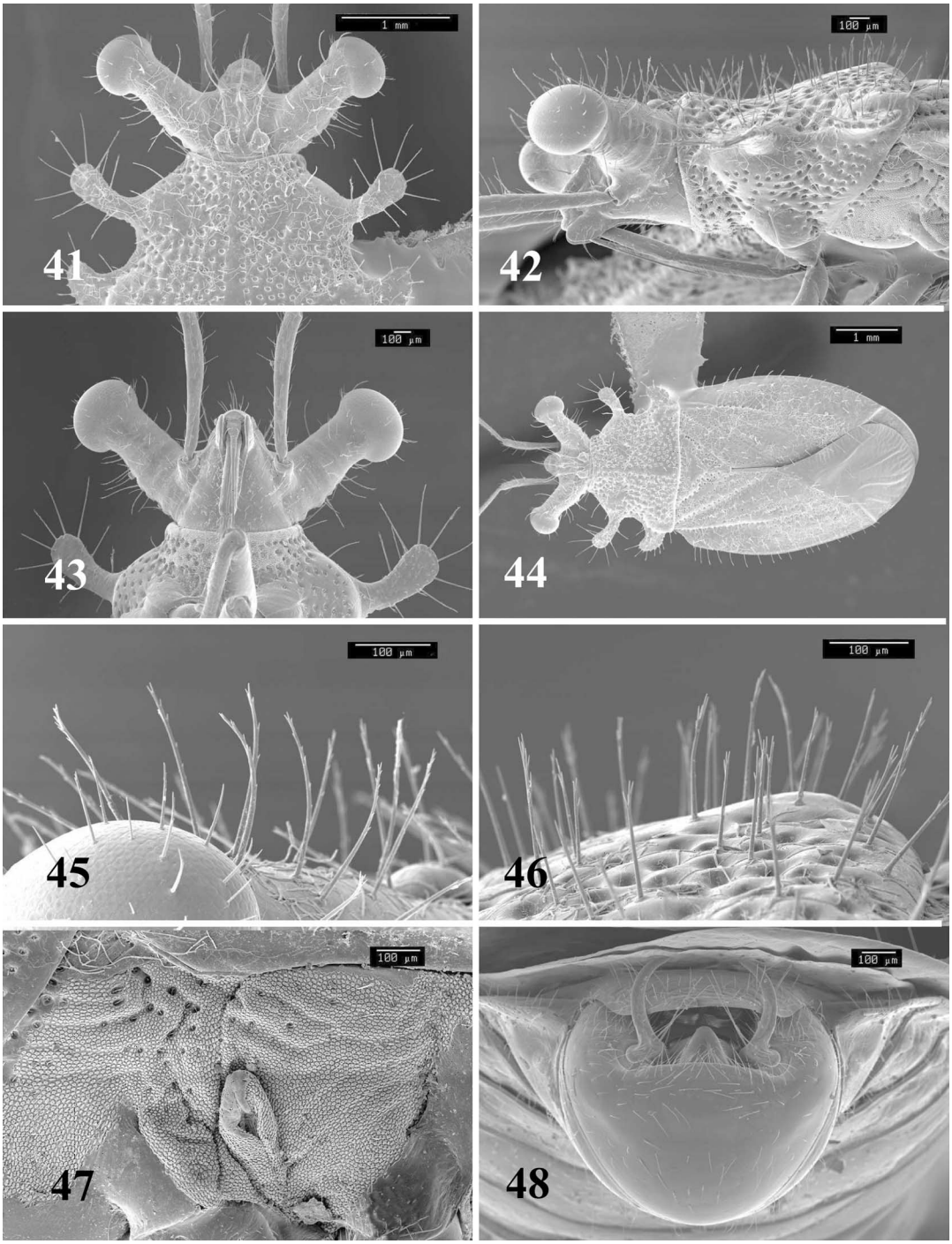
This new species is named after Dr. Geoffrey Scudder in honor of his recent retirement and for his many outstanding contributions on the Lygaeoidea, including work on the subfamily Pamphantinae. During my work on the phylogeny of the Pentatomomorpha and Lygaeoidea (Henry 1997), I found Geoff Scudder's revisionary works among the most useful in the literature for extracting well-defined synapomorphies.

Diagnosis

This species is distinguished by the slender, distally rounded lateral pronotal processes that weakly curve posteriorly (Figs. 39, 64); the

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 41–48. Scanning electron micrographs of *Epipolops rettenmeyeri*: 41, head and pronotum, dorsal aspect (25.7×); 42, head and pronotum, lateral aspect (47.3×); 43, head, ventral aspect (40.8×); 44, head, pronotum, and hemelytra, dorsal aspect (14.5×); 45, barbed setae on head (176.5×); 46, barbed setae on pronotum (185.6×); 47, metathoracic ostiolar area (102.8×); 48, genital capsule, caudal aspect (80.5×).



https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

short, sharp tubercle at each anterior pronotal angle (Fig. 64); and the lack of a lateral toothlike process at the base of the hemelytron (Fig. 78). This is the only species having a short tubercle at the anterior angle of the pronotum.

Description

Male (*n* = 2; holotype first): length 3.72–3.80 mm, width 1.81–1.82 mm. **Head:** length 0.52–0.55 mm, basal width 0.52–0.53 mm, width across eyes 1.39–1.43 mm, length from ocellus to outer margin of eye 0.68–0.69 mm. **Labium:** length 1.24 mm (one specimen only; holotype glued on card under body), extending to bases of mesocoxae. **Antenna:** length of segment I, 0.68–0.70 mm; II, 0.46–0.47 mm; III, 0.34–0.35 mm; IV, 0.49–0.51 mm. **Pronotum:** length 0.74–0.84 mm, basal width 1.29–1.31 mm.

Female (*n* = 1): length 4.40 mm, width 2.10 mm. **Head:** length 0.64 mm, basal width 0.60 mm, width across eyes 1.53 mm, length from ocellus to outer margin of eye 0.74 mm. **Labium:** length 1.74 mm. **Antenna:** length of segment I, 0.77 mm; II, 0.52 mm; III, 0.38 mm; IV, 0.53 mm. **Pronotum:** length 0.99 mm, basal width 1.53 mm.

Coloration: overall yellowish brown. Head yellowish brown, without dark markings; eyes and ocelli red or red-tinged. Antenna yellowish brown; segment I with a narrow brown line on posterior face; segments II and III narrowly brown at base; segment IV dark brown on distal one third. Pronotum uniformly yellowish brown. Hemelytron yellowish brown; corium with a faint orange–brown spot at middle and a narrow brown line distally bordering membrane. Ventral surface and legs uniformly yellowish brown.

Structure and vestiture: head impunctate; median carina narrow but distinct; clothed with long, erect, slender setae subequal to diameter of eye stalk; eye facets lacking or with only very small, fine setae. Pronotum evenly punctate, except for smooth, quadrate area of calli; anterior angle with a short, sharp tooth; lateral process of anterior lobe slender, distally rounded, and weakly curved posteriorly; lateral process of posterior lobe shorter, slender, distally rounded, and weakly curved posteriorly; clothed with long, erect, slender setae on dorsum and lateral processes. Hemelytron marginally convex, finely crenulate, lacking toothlike process at base; clavus with two to three rows of punctures; corium with a row of punctures along claval commissure and along each vein.

Host

Specimens of this species were collected from the foliage of *Pourouma bicolor* Mart. (Urticaceae) in Colón, Panama, using a canopy crane at STRI (Smithsonian Tropical Research Institute).

Distribution

Known only from Panama.

Discussion

I have studied the holotype of *E. mucronatus* Distant and believe that specimens reported by Brailovsky (1990) and Slater (1998) as *E. mucronatus* are not conspecific and represent the new species described here as *E. scudderi*.

Epipolops slateri sp. nov.

(Figs. 49, 50, 65, 79)

Type specimens

Holotype: ♂, Orellana Prov. (previously Napo), Reserva Ethnica Waorani, 1 km S of Oncone Gare Camp, Trans. Ent., 39°10′S, 76°26′W, 21.vi.1994, T.L. Erwin *et al.*, insecticidal fogging of mostly bare green leaves, with some covering of lichenous or bryophytic plants, x-transect 7 (held in trust at USNM). **Paratypes:** 4 ♀♀, same data as for holotype, except the dates 2–3.x.1996 and 12.ii.1995, and transect 6 (USNM).

Etymology

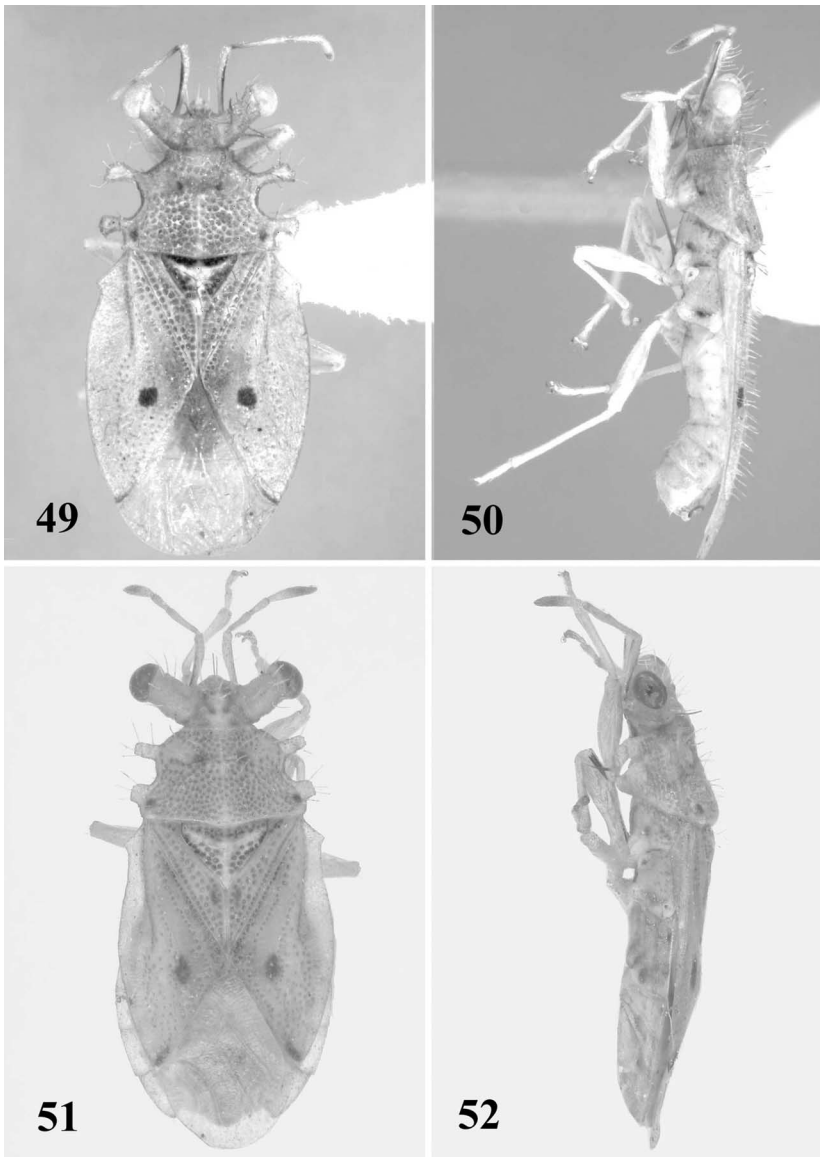
This species is named in honor of Dr. James A. Slater for his many outstanding contributions on the Lygaeoidea, including two important world catalogs (one with J.E. O'Donnell), a synopsis of the true bugs of the world (with R.T. Schuh), and several papers on the genus *Epipolops*.

Diagnosis

Epipolops slateri is distinguished by the darkened distal half of antennal segment IV; the distally quadrate, marginally crenulate lateral pronotal processes (Figs. 49, 65); the blunt dorsal tubercle at each humeral angle (Fig. 65); the small, distinct, lateral toothlike process at the base of the hemelytron (Fig. 79); the dark brown spot at the middle of the corium (Fig. 49); and

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 49–52. Photographs of *Epipolops* spp. *Epipolops slateri*: 49, dorsal aspect; 50, lateral aspect. *Epipolops thomasi*: 51, dorsal aspect; 52, lateral aspect.



the short, erect, slender setae on the hemelytra (Fig. 50).

Description

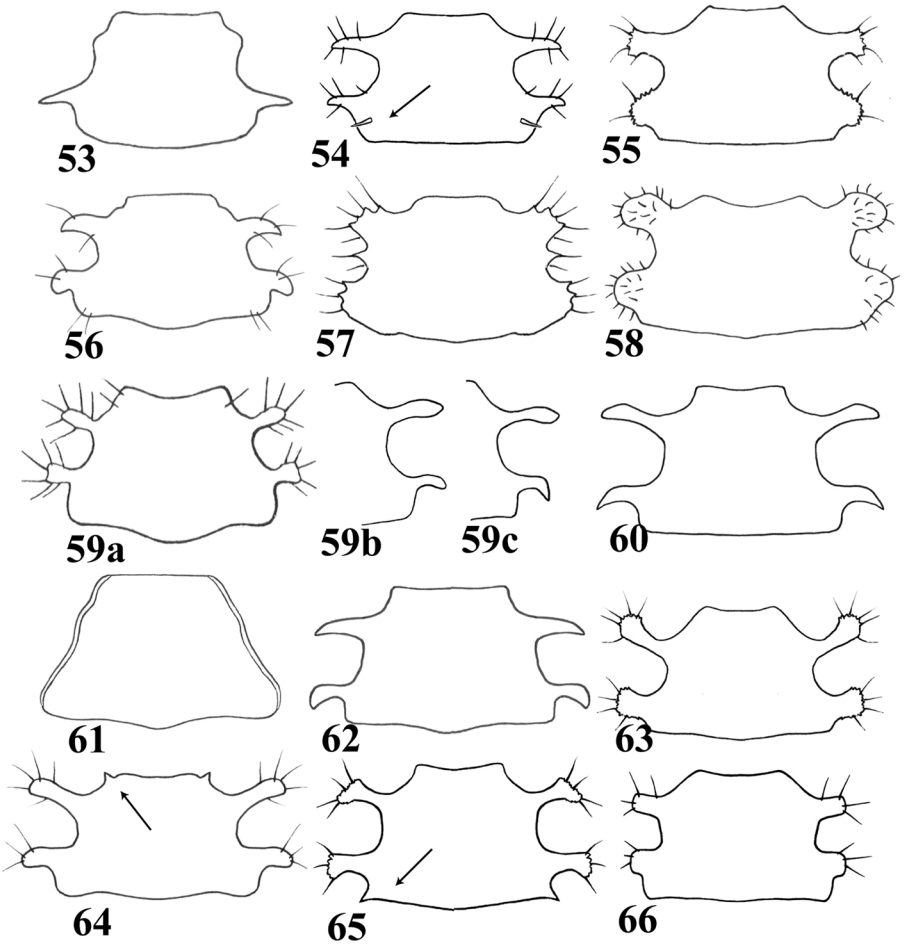
Holotype male: length 4.68 mm, width 2.28 mm. **Head:** length 0.60 mm, basal width 0.61 mm, width across eyes 1.58 mm, length from ocellus to outer margin of eye 0.77 mm. **Labium:** length 1.84, extending to mesocoxae. **Antenna:** length of segment I, 0.81 mm; II, 0.59 mm; III, 0.46 mm; IV, 0.55 mm. **Pronotum:** length 1.07 mm, basal width 1.54 mm.

Female (n = 3): length 4.75–4.85 mm, width 2.26–2.28 mm. **Head:** length 0.56–0.62 mm, basal width 0.59–0.62 mm, width across eyes 1.57–1.60 mm, length from ocellus to outer margin of eye 0.75–0.78 mm. **Labium:** length 1.80–1.84 mm, extending to mesocoxae. **Antenna:** length of segment I, 0.85–0.86 mm; II, 0.56–0.59 mm; III, 0.40–0.42 mm; IV, 0.59 mm. **Pronotum:** length 1.06–1.09 mm, basal width 1.62–1.64 mm.

Coloration: overall yellowish brown, with a few dark brown spots. Head yellowish brown,

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 53–66. Pronotal outlines of *Epipolops* spp.: 53, *E. acuminatus*; 54, *E. angelae* (arrow indicates tubercle at humeral angle); 55, *E. arboricolus*; 56, *E. bellus*; 57, *E. frondosus*; 58, *E. kathrynae*; 59*a*, *E. lenkoi* (redrawn from Canter 1964); 59*b*, *E. lenkoi* (variation of lateral processes); 59*c*, *E. lenkoi* (variation of lateral processes); 60, *E. mucronatus*; 61, *E. oculuscanri*; 62, *E. quadrispinus*; 63, *E. rettenmeyeri*; 64, *E. scudderi* (arrow indicates tuberculate anterior angle); 65, *E. slateri* (arrow indicates tuberculate humeral angle); 66, *E. thomasi*.

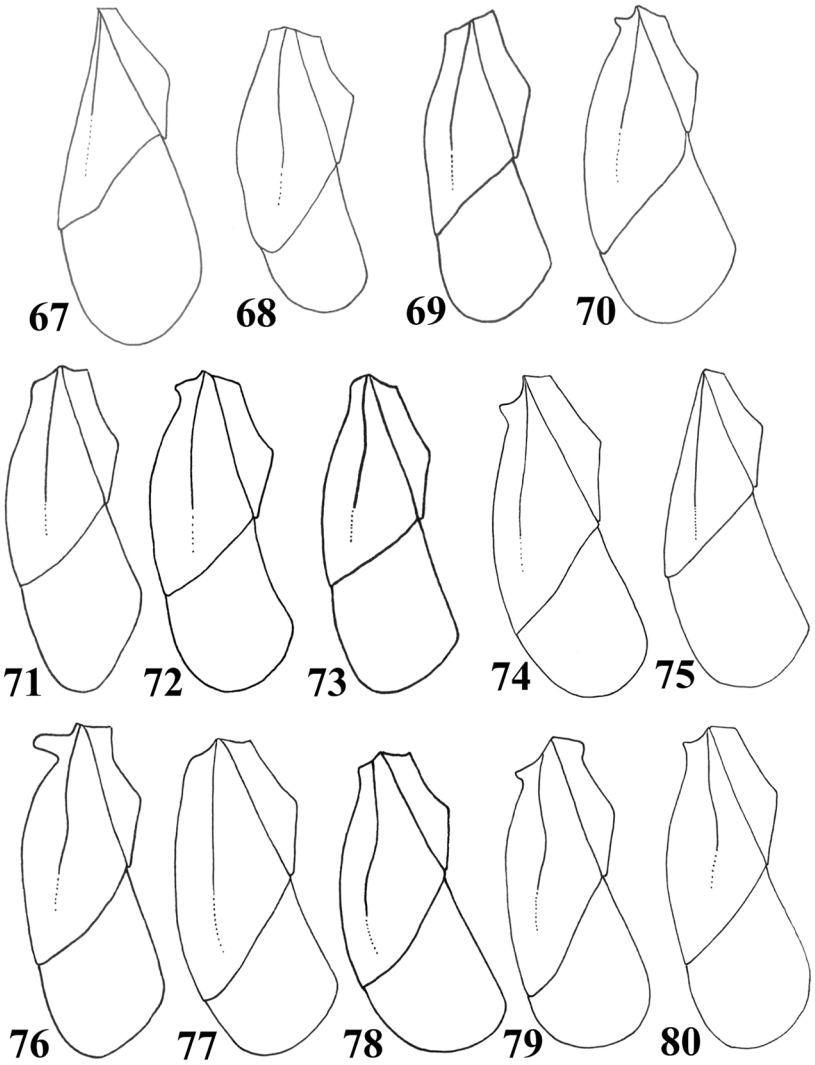


lacking dark brown or fuscous lines on posterior face or base of eye stalk; eyes and ocelli faded red (probably more vivid before storage in alcohol). Pronotum uniformly yellowish brown, with a small brown spot on each callus and at each humeral angle; punctate area of scutellum fuscous or black, mesal and transverse carinae pale yellowish brown. Hemelytron yellowish brown; corium with a distinct brown spot at middle and a narrow dark line along distal margin bordering membrane.

Structure and vestiture: head smooth, lacking rugosities on eye stalks; meson with narrow, high carina extending from between ocelli to base of clypeus; clothed with long, slender, pale setae, some longer than diameter of eye stalks, on eye stalks, vertex, and frons; eye facets nearly glabrous with only a few very short, indistinct setae. Pronotum evenly punctate, except quadrate area of calli; anterior lateral process slender, straight, distally rounded, and marginally crenulate; posterior lateral process slender, weakly recurving, distally quadrate, and marginally crenulate; humerus angulate, forming a short, sharp, brown tubercle; clothed with long, slender, pale setae on dorsum and lateral processes. Hemelytron marginally convex, finely crenulate, with a short toothlike process near base; clavus with two or three rows of punctures, corium with one row along clavus and one row along each vein membrane; clothed with slender, erect, pale setae, slightly shorter than setae on head and pronotum.

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

Figs. 67–80. Hemelytral outlines of *Epipolops* spp.: 67, *E. acuminatus*; 68, *E. angelae*; 69, *E. arboricolus*; 70, *E. bellus*; 71, *E. frondosus*; 72, *E. kathrynae*; 73, *E. lenkoi* (redrawn from Canter 1964); 74, *E. mucronatus*; 75, *E. oculuscanri*; 76, *E. quadrispinus*; 77, *E. rettenmeyeri*; 78, *E. scudderi*; 79, *E. slateri*; 80, *E. thomasi*.



Host

Unknown.

Distribution

Known only from Orellana Province, Ecuador.

Epipolops thomasi sp. nov.

(Figs. 51, 52, 66, 80)

Type specimens

Holotype: ♂, Bolivia, Coripata, 1700 m, Yungas, La Paz, 1.xii.1984, L.E. Peña (USNM). **Paratypes:** 1 ♀, same data as for holotype; 1 ♂, 1 ♀, Bolivia, Apolo, N. La Paz, 5/15.viii.1989, L.E. Peña (USNM).

Etymology

Named in honor of my son, Thomas Alan Henry, 3-D computer graphics master extraordinaire, for his kind assistance with my elementary graphics problems.

Diagnosis

This new species is most similar to *E. mucronatus* and *E. slateri* in having a small toothlike process at the base of the hemelytron (Fig. 80), but can be distinguished by the short, blunt

https://doi.org/10.4039/n06-808 Published online by Cambridge University Press

lateral process on the posterior lobe (Figs. 51, 66) and the dull orange–red spots on the clavus and corium (Fig. 51).

Description

Male (n = 2; holotype in parentheses): length 4.04 mm (4.16 mm), width 1.65 mm (1.63 mm). **Head:** length 0.59 mm (0.58 mm), basal width 0.58 mm (0.59 mm), width across eyes 1.50 mm (1.56 mm), length from ocellus to outer margin of eye 0.66 mm (0.66 mm). **Labium:** length 1.46 mm (1.44 mm), extending to mesocoxae. **Antenna:** length of segment I, 0.61 mm (0.61 mm); II, 0.42 mm (0.45 mm); III, 0.27 mm (0.27 mm); IV, 0.48 mm (0.46 mm). **Pronotum:** length 0.85 mm (0.91 mm), basal width 1.31 mm (1.39 mm).

Female (n = 2): length 4.52–4.60 mm, width 1.92–1.96 mm. **Head:** length 0.56–0.59 mm, basal width 0.59–0.64 mm, width across eyes 1.60–1.65 mm, length from ocellus to outer margin of eye 0.67–0.69 mm. **Labium:** length 1.60–1.63, extending to mesocoxae. **Antenna:** length of segment I, 0.59–0.61 mm; II, 0.40–0.42 mm; III, 0.27–0.29 mm; IV, 0.49–0.50 mm. **Pronotum:** length 0.96 mm, basal width 1.50–1.52 mm.

Coloration: overall yellowish brown, with various dark brown lines and dark brown or orange–red spots on the dorsum and ventral surface. Head yellowish brown, with a dark brown line on either side of median carina and a small spot behind each ocellus on some specimens; eyes and ocelli red-tinged. Antenna yellowish brown; segment I with a narrow dark brown line on posterior face; segment IV dark brown on distal half. Pronotum yellowish brown, with a small brown spot on each callus and at each humeral angle; scutellum yellowish brown, transverse and median carinae paler yellow. Hemelytron translucent yellowish brown, with a dull orange–red spot at inner angle of clavus and middle of corium, and a narrow dark brown mark at apex of corium bordering membrane; membrane evenly translucent brown. Ventral surface and legs yellowish brown, with red to reddish brown spots midlaterally on abdominal segments II–VII or VIII and some specimens with a few red to reddish brown marks along lateral margins of segments II–V.

Structure and vestiture: head impunctate, with a relatively broad, shallow median carina extending from between ocelli to base of clypeus; eye stalks stout, strongly rugose; clothed with relatively short, erect, yellowish brown setae on vertex between eyes and eye stalks, intermixed with two or three dark brown or fuscous setae on clypeus and frons; overall setal length only about half the diameter of an eye stalk. Pronotum evenly punctate, except for shiny, flat areas of calli; lateral process on anterior lobe stout, distally rounded or truncate; lateral process on posterior lobe very short, distally truncate or spatulate, and widely disjunct from humeral angle; humeral angle with a short, blunt tubercle. Hemelytron laterally finely crenulate, weakly convex, with a small toothlike process at base.

Host

Unknown.

Distribution

Known only from Bolivia.

Acknowledgments

I am grateful to T.L. Erwin (USNM), Boston University (Boston, Massachusetts), and Catholic Universidad (Quito, Ecuador) for the opportunity to collect at the Tiputini Biodiversity Research Station (http://www.usfq.edu.ec/1TIPUTINI/index.html) in Ecuador; H. Brailovsky (UNAM) for local hospitality and companionship during my fieldwork in Mexico; M.A. Touchet (Systematic Entomology Laboratory (SEL), ARS, USDA, c/o National Museum of Natural History, Smithsonian Institution, Washington, D.C.) for the photographs included in this paper; and Y. Basset (STRI), H. Brailovsky (UNAM), R.T. Schuh (AMNH), and M. Webb (BMNH) for lending important specimens used in this study. I also thank J.W. Brown (SEL), G.L. Miller (SEL), and M.H. Sweet (Texas A & M University, College Station) for kindly reviewing an earlier draft of the manuscript.

References

Ashlock, P.D. 1957. An investigation of the taxonomic value of the phallus in the Lygaeidae (Hemiptera–Heteroptera). Annals of the Entomological Society of America, **50**: 407–426.

Bergroth, E. 1893. Notes synonymiques suivantes sur quelques Lygéides (Hémiptères). Bulletin Société Entomologique de France, **62**: ccxxv.

Brailovsky, H. 1990. Descripción de dos epecies nuevas del género *Epipolops* H.S. de sudamérica (Hemiptera–Heteroptera–Lygaeidae Bledionotinae).

Anales Instituto Biologia, Universidad Nacional Autónoma México, Ser. Zool. **61**: 125–132.

Canter, H.M. 1964. Contribuição ao conhecimento do gênero *Epipolops* H.-Schaeffer, 1853 (Hemiptera, Lygaeidae, Geocorinae). Papéis Avulsos do Dept de Zoologia, Secretaria da Agriculture, São Paulo, Brasil, **16**(6): 63–70.

De Geer, C. 1773. Mémoires pour servir à l'Histoire des Insects. Vol. III. P. Hosselberg, Stockholm. ii + 696 pp., 44 pl.

Distant, W.L. 1893. Insecta, Rhynchota: Hemiptera–Heteroptera. *In* Biologia Centrali-Americana. Vol. I. *Edited by* F.D. Goodman and O. Salvin. London. pp. i–xx + 329–462.

Hamid, A. 1975. A systematic revision of the Cyminae (Heteroptera: Lygaeidae) of the world with a discussion of the morphology, biology, phylogeny and zoogeography. Occasional Papers of the Entomological Society of Nigeria, **14**: 1–179.

Henry, T.J. 1997. Phylogenetic analysis of the family groups with the infraorder Pentatomomorpha (Hemiptera: Heteroptera), with emphasis on the Lygaeoidea. Annals of the Entomological Society of America, **90**: 275–301.

Herrich-Schaeffer, G.A.W. 1849–1851. Die Wanzenartigen Insecten. Lotzbeck, Nürnburg. **9**: 1–44 (1849); **9**: 45–256 (1850); **9**: 257–348 (1851).

Lethierry, L.F., and Severin, G. 1894. Catalogue général des Hémiptères. Tome II. Coreidae, Berytidae, Lygaeidae, Pyrrhocoridae. R. Friedlander and Fils, Bruzelles and Berlin.

Piran, A.A. 1958. Hemiptera Neotropical I. Revista Sociedad Entomologica Argentina, **20**: 57–61.

Slater, J.A. 1964. A catalogue of the Lygaeidae of the world. University of Connecticut, Storrs.

Slater, J.A. 1998. A new species of *Epipolops* H.S. from South America (Heteroptera: Lygaeoidea: Geocoridae). Journal of the New York Entomological Society, **106**: 64–68.

Slater, J.A. 1999. The systematic position of the Pamphantinae with the description of two new tribes and a new species of *Cattarus* (Hemiptera: Lygaeoidea: Geocoridae). Acta Societatis Zoologicae Bohemicae, **63**: 199–208.

Slater, J.A., and Henry, T.J. 1999. Notes on and descriptions of new Pamphantinae, including four new species of *Cattarus* and a remarkable new myrmecomorphic genus and species (Heteroptera: Lygaeoidea: Geocoridae). Journal of the New York Entomological Society, **107**: 304–330.

Slater, J.A., and O'Donnell, J.E. 1995. A catalogue of the Lygaeidae of the world (1960–1994). New York Entomological Society, New York.

Stål, C. 1862. Hemiptera Mexicana enumeravit species-que novas descripsit. Stettin Entomologishe Zeitung, **23**(1–3): 81–118; **23**(4–6): 273–281; **23**(7–9): 289–325; **23**(10–12): 437–462.

Stål, C. 1868. Hemiptera Fabriciana. Fabricianska Hemipterarter, efter de i Köpenhamn och Kiel förvarade typexemplaren granskade och beskrifne. 1. Kongliga Svenska Vetenskaps-Akademiens Handlingar, **7**(11): 1–148.

Stål, C. 1870–1876. Enumeratio Hemipterorum: Bidrag till en företeckning öfver alla hittills kända Hemiptera, jemte systematiska meddelanden. Parts 1–5. Kongliga Svenska Vetenskaps-Akademiens Handlingar 1870, Part 1, **9**(1): 1–232; 1872, Part 2, **10**(4): 1–159; 1873, Part 3, **11**(2): 1–163; 1874, Part **4,12**(1): 1–186; 1876, Part 5, **14**(4): 1–162.