Acrolophyses, a new seed bug genus and two new species
(Hemiptera: Heteroptera: Rhyparochromidae: Myodochini)
from forest-canopy fogging in Ecuador and Peru

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Abstract
The new myodochine (Rhyparochromidae) genus Acrolophyses is described to accommodate the two new species A. arboricolous from Ecuador and Peru, designated as the type species, and A. hadros from Ecuador. The new species are diagnosed and described, and adult photographs, scanning electron photomicrographs of selected structures and illustrations of male genitalia are provided to aid in identification. The relationship of Acrolophyses with the genera Distingphyses and Pephysena is discussed.

Keywords
New myodochnes, Acrolophyses arboricolous, Acrolophyses hadros, new species

Introduction
Myodochini is among the most diverse of the 14 tribes of Rhyparochromidae, with 71 genera and more than 300 species occurring worldwide (Harrington 1980; Slater & O’Donnell 1995; Slater & Slater 1999; Dellapé 2008a,b). Members of the tribe are generally found on the ground, living in litter below plants. Some species climb vegetation when mature seeds are available and others habitually live above ground on weedy vegetation. Among the Myodochini, only certain species of Cholula (Cervantes & Pacheco 2003, 2006) have been observed to be arboreal. Slater (1977) stated that only a few rhyparochromids (as Rhyparochrominae) have become secondarily arboreal but many others probably will prove to be so adapted when the habits of the group are better known in the wet tropics.

In this contribution, we describe a new genus and two new species of arboreal myodochines from canopy-fogging samples taken in Ecuador and Peru by Terry L. Erwin.
(Smithsonian Institution, Washington, DC, USA). Each species is diagnosed and described, and adult photographs, scanning electron photomicrographs of selected structures and illustrations of male genitalia are provided to facilitate identification.

Materials and methods

Color images were captured using an EntoVision Imaging Suite that included a JVC KY-75 3CCD digital camera mounted to a Leica M16 zoom lens via a Leica z-step microscope stand. Multiple focal planes were merged using Cartograph 5.6.0 (Microvision Instruments, Evry, France) software. Photomicrographs were captured using an AMRAY 1810 scanning electron microscope set at 10 kV. Acronyms used for institutions cited in the paper are MLP (Museo de La Plata, La Plata, Argentina) and USNM (National Museum of Natural History, Smithsonian Institution, Washington, DC, USA). Measurements are given in millimeters.

Results

Acrolophyses Dellapé and Henry, new genus

Type species: Acrolophyses arboricolous Dellapé and Henry, new species.

Diagnosis

Head with a short cylindrical neck; strong midventral carina; genal ridge from the base of the antenniferous tubercle to the anterior part of the head.

Description

Myrmecomorphic. Head punctate, elongate behind eyes, forming a short cylindrical neck; strong midventral carina prolonged from the V-shaped buccular juncture; eyes oval; jugal ridge well developed; gena forming a strong ridge from the base of the antenniferous tubercle to near apex of clypeus (Figs 6, 8, 11); antenniferous tubercles short; antennal segment I short, set anteriorly near inner margin of eye. Anterior pronotal lobe heavily punctate (Fig. 13), shiny lateral margins of both pronotal lobes rounded, collar well delimited; posterior pronotal lobe punctate pruinose except for the shiny posterior fringe (Fig. 14). Scutellum gray, punctate, pruinose on basal half, shiny on black central tumid area and apex. Clavus with three rows of punctures, filled in between with randomly placed punctures on distal half; corium with two rows of punctures on inner half, distal half evenly punctate. Evaporative area extensive, covering all of metapleural area, except shiny dorsal one quarter or less; mesepimeron enclosed (Fig. 15). Procoxa with two spines in both sexes; protrochanter unarmed; profemur incrassate, with two rows of distinct, stout spines filled in between with minute spines (Fig. 17); protibia slightly curved, with numerous minute tubercles over entire ventral surface (Fig. 18); male mesofemur sometimes armed with a row of small tubercles. Abdominal sternites III and IV without lateral setae. Aedeagus: sperm reservoir well developed with broad wings, vesica with two membranous lobes, conjunctiva with small to minute spines.
Figs 1–4. *Acrolophyses arboricolous*, adults. (1) Male, dorsal aspect; (2) male, lateral aspect; (3) female, dorsal aspect; (4) female, lateral aspect. This figure is published in colour in the online edition of this journal, that can be accessed via http://www.brill.nl/ise
The generic name is formed from the Greek word “akrolophos”, meaning ridge, and from the suffix “physes”, meaning growths, taken from the related genus *Distingphyses* and is used to reflect the relationship of these two taxa. The gender is masculine.

**Discussion**

The species of *Acrolophyses* run to the couplet 37 in Harrington’s key to the Myodochini of the world (Harrington 1980), where the genera *Xenydrium* Poppius & Bergroth and *Distingphyses* Scudder are identified. This new genus appears closely related to the monotypic genus *Distingphyses* Scudder (1962) based on the presence of a genal ridge, a character known only in these two genera; the midventral carina on the head; the pronotal texture, with a shiny shagreened anterior lobe and a pruinose posterior lobe with a shiny, shagreened fringe posteriorly (Figs 13, 14, 35); and by the extensive,
lateral, shiny area on abdominal sternites III and IV. In addition, both genera share an enclosed mesepimeron (Fig. 15), a crenate costal margin, and a slightly curved, unspined protibia in males.

*Distingphyses insignis* (Distant) (Figs 35, 36) has a less well-developed genal ridge and midventral carina; the head has a shorter neck; antennal segment I is longer, almost attaining the apex of head; and the scutellum is completely pruinose. This species previously was known only from Panama (Scudder 1962, Slater 1964). We have now studied a female from Costa Rica (Heredia Prov. La Selva Biol. Stn., gen. sweep, 25 July 1989, D. G. Furth) deposited in USNM that represents a new country record and significantly extends the geographic distribution.

The only other genus of *Myodochini* with a midventral carina is *Pephysena* Distant, revised by Harrington (1981). Species of this genus, such as *P. levis* Distant (Figs 37, 38), lack the genal ridge, have a different pronotal pattern, the collar is pruinose, the mesepimeron is emergent, and abdominal sternites III and IV are completely pilose. The only attempt to establish a phylogenetic scheme between the genera of *Myodochini* was the hypothesis presented by Harrington (1980). This cladogram shows four lineages based on four types of male genitalia. Based on the characters mentioned above, plus the male genitalia, *Acrolophyses* should be placed in the lineage of type IV closely related to the clade *Distingphyses + Pephysena*, probably as the sister group of *Distingphyses*.

*Acrolophyses arboricolous* Dellapé and Henry, new species (Figs 1–6, 9–25)

**Diagnosis**

This species is distinguished by the relatively small size, long rostrum extending to the bases of the procoxae or slightly beyond, and antennal segments III and IV brown with numerous, short, decumbent setae, but lacking short, erect setae as in *A. hadros*.

**Description**

Male (Figs 1, 2, 9–25) (measurements: range (n=5), followed by mean, with holotype in parentheses): Total length: 5.20–5.70, 5.38 (5.40). Ant mimetic. Head (Figs 9–12) black, clypeus pale brown, reddish at apex; with abundant short, decumbent, silvery setae, and long, erect setae dorsally. Head length: 1.44–1.52, 1.49 (1.56); width: 1.20–1.28, 1.24 (1.24). Anteocular length 0.80–0.84, 0.82 (0.84). Postocular length 0.32–0.36, 0.34 (0.32). Antenniferous tubercles very short. Interocular space: 0.68–0.76, 0.71 (0.72). Ocelli located between and near posterior margin of eyes. Intercellular space: 0.44–0.52, 0.46 (0.48). Vertex rounded (Figs 5, 10). Rostrum brown, segment II paler, with sparse semifixed setae. Rostrum extending to procoxae. Rostral segment lengths: I 0.64, 0.64 (0.64); II 0.60–0.64, 0.63 (0.64); III 0.36, 0.36 (0.36); IV 0.36, 0.36 (0.36). Antenna brown, segment I pale brown, with distal three fourths dark reddish brown dorsally, with abundant, short, decumbent setae. Antennal segment lengths: I 0.30–0.32, 0.32 (0.32); II 0.96–1.08, 0.99 (1.04); III 0.72–0.80, 0.77 (0.80); IV 0.84–0.92, 0.87 (0.92).
Pronotum (Figs 12–14) black, posterior margin pale brown; setae short, decumbent, silvery, shorter on posterior lobe. Humeral angles very slightly produced. Collar length 0.08, 0.08 (0.08); anterior lobe length 0.76, 0.76 (0.76); posterior lobe length 0.68–0.84, 0.74 (0.84). Collar width 0.48–0.56, 0.53 (0.55); anterior lobe width 0.92–1.08, 0.99 (0.96); posterior lobe width 1.36–1.48, 1.43 (1.40). Humeral angles very slightly protruding. Scutellum and hemelytra with very short, decumbent setae. Hemelytron pruinose. Clavus black, except for pale brown anterior half of outer margin, with three rows of punctures and an incomplete row on distal three-fourths between median and inner rows, and scattered additional punctures on distal half. Corium black, except on lateral margins of anterior two-thirds, anterior half medially and a subapical macula pale brown; outer margin of corium slightly concave and

Figs 9–14. Acrolophyses arboricolous. (9) Head, dorso-frontal view; (10) head, frontal view (jr, jugal ridge; gr, genal ridge); (11) head, lateral view (jr, jugal ridge, gr: genal ridge; mc, midventral carina); (12) head and pronotum, lateral view; (13) detail of pronotum texture, left side is anterior; (14) posterior pronotal lobe, scutellum and part of clavus and corium of hemelytra.
Figs 15–20. Acrolophyses arboricola. (15) Auricle and evaporatorium; (16) detail of evaporatorium; (17) detail of inner surface of profemur; (18) detail of protibia (tc, tibial tubercle); (19) claw; (20) dorsal aperture of pygophore.

crenate on anterior two-thirds. Membrane fuscous, with a fringe adjacent to distal corial margin continuing medially and a small subapical macula whitish. Pleura black, shagreened, shiny, except for pruinose, punctate acetabular area of anterior legs, with very short setae. Metathoracic scent gland auricle and evaporatorium as in Figs 15 and 16. Legs (Figs 17–19). Procoxae with two small spines. Spines on profemora small, some of them bearing a seta (Fig. 17). Mesofemora without spines. Coxae, protrochters, femora (except basally), and meso- and metatibiae brown; protibiae, meso- and metatrochanters, and base of femora pale brown. Spines on profemora pale brown, dark at apex; some males have small tubercles on mesofemur. Legs with very short, decumbent, silvery setae. Abdomen black, with abundant short, decumbent, silvery setae, and sparsely set, long, erect setae.
Male genitalia: Pygophore (Figs 20–22) with anterior margin of dorsal aperture rounded, inner projections subquadrangular, dorsal margin declivent posteriorly. Parameres (Figs 23, 24) with a small, relatively short, curved blade; inner projection of shank elongate, with setae continuing to base of blade; outer projection small. Aedeagus (Fig. 25): vesica with two membranous lobes; body of ejaculatory reservoir rounded, pointed basally; gonoporal process thickened toward apex; conjunctiva with about 16 small spines postero-laterally below the ejaculatory reservoir, some giving rise to a long seta and three minute basal spines.

Female (Figs 3–6) (measurements: range (n = 5), followed by mean): Total length 5.50–5.90, 5.68. Head: length 1.48–1.60, 1.53; width 1.28–1.32, 1.30; anteocular distance 0.80–0.88, 0.83; postocular distance 0.32–0.40, 0.36; interocular space 0.76–0.80, 0.78; interocellar space 0.48–0.52, 0.50. Antennal segment lengths: I 0.32–0.36, 0.34; II 0.96–1.08, 1.02; III 0.76–0.80, 0.77; IV 0.84–0.92, 0.88. Rostral segment lengths: I 0.64–0.68, 0.67; II 0.64–0.72, 0.66; III 0.36–0.40, 0.37; IV 0.36, 0.36. Collar length 0.08, 0.08; anterior lobe length 0.64–0.68, 0.65; posterior lobe length 0.60–0.64, 0.62. Collar width 0.56, 0.56; anterior lobe width 0.96–1.00, 0.98; posterior lobe width 1.48–1.56, 1.54.
Figs 26–29. *Acrolophyses hadros*, adults. (26) Male, dorsal aspect; (27) male, lateral aspect; (28) female, dorsal aspect; (29) female, lateral aspect. This figure is published in colour in the online edition of this journal, that can be accessed via http://www.brill.nl/ise

Etymology

The specific name *arboricolous* is derived from the Latin “arbor”, meaning tree, and the masculine form of the Latin “cola”, meaning inhabitant of, and refers to the arboreal habits of the species.
Distribution
Ecuador and Peru.

Discussion
This species is similar in general appearance to *A. hadros*. See discussion under *A. hadros* for a more detailed comparison between the species, with additional characters, in addition to those in the diagnosis.

Type material
Holotype ♂, Ecuador, Napo Prov. (now Orellana Prov.), Res. Ethnica Waorani, 1 km. S. Onkone Gare Camp, Trans. Ent., 3 Oct. 1996, 220 m, 00°39′10″S 76°26′00″W, T. L. Erwin et al., insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants in terre firme forest, at Trans. 8, Lot 1730 (held in trust at USNM). Paratypes (all in USNM (with a percentage held in trust) unless indicated otherwise): Ecuador: 3 ♀♀, Napo Prov. (now Orellana Prov.), Tiputini Biodiversity Station, 216 m, 00°37′55″S 76°08′39″W, 27 October 1998, T. L. Erwin et al. collectors, insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants; Lot 1955, Trans. T-6 (1 ♀, MLP); 1 ♂, 1 ♀, same data, 26 Oct. 1998, Lot 1941, Trans. T-5; 1 ♀, same data, 22 Oct. 1998, Lot 1965, Trans. T-7; 1 ♂, 2 ♀, same data, 1 July 1998, Lot 1840, Trans. T-5 (1 ♂, MLP); 2 ♀♀, same data, 5 Feb. 1999, Lot 2080, Trans. T-9 (1 ♂, MLP); 1 ♀, 2 ♀ Napo (now Orellana Prov.), Res. Ethnica Waoranı, 1 km. S. Onkone Gare Camp, Trans. Ent., 2 Oct. 1996, 220 m., 00°39′10″′S 76°26′00″W, T. L. Erwin et al., insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants in terre firme forest, Lot 1717, Trans. T-6 (1 ♀, MLP); 1 ♂, 1 ♀ same data, 3 Oct. 1996, Lot 1729, Trans. T-7; 1 ♀, Napo Prov. (now Orellana Prov.), Res. Ethnica Waorani, 1 km. S. Onkone Gare Camp, Trans. Ent., 24 Jan. 1994, 220 m., 00°38′S 76°36′W, T. L. Erwin et al., insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants Project MAXUS, At x-trans 8, 94 m, Lot 649; 1 ♂, same data, 21 June 1994, at 8 x-Trans. 29 m mark Project MAXUS, Lot 705; 2 ♂♂, same data, 7 Oct. 1994, Trans. 8, Sta. 6 Project MAXUS, Lot 905 (1 ♂, MLP); 1 ♀, same data, 9 Oct. 1994, Trans. 6, Sta. 1 Project MAXUS, Lot 920; 1 ♂, 2 ♀♀, same data, 4 Oct. 1994, Trans. 1, Sta. 1 Project MAXUS, Lot 850 (1 ♂, MLP); 1 ♂, 1 ♀, Napo Prov. (now Orellana Prov.), Res. Ethnica Waorani, 1 km. S. Onkone Gare Camp, Trans. Ent., 3 Oct. 1996, 220 m, 00°39′10″′S 76°26′00″′W, T. L. Erwin et al., insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants in terre firme forest, at Trans. 8, Lot 1731; 1 ♂, same data, 4 Oct. 1996, Lot 1743, T-9; 1 ♂, same data, 2 Oct. 1996, Lot 1707, Trans. T-5; 1 ♂, same data, 26 Oct. 1998, Lot 1940, Trans. T-5; 1 ♂ same data, 22 Oct. 1998, Lot 1975, Trans. T-8. Peru: 1 ♂, Madre de Dios, Rio Tambopata Res. 30 km. (air) SW Pto. Maldonado, 290 m, 12°50′S 69°17′W, 7 March ’84 02/02, Smithsonian Institution Canopy Foggng Project, T. L. Erwin et al. colls.
Acrolophyses hadros Dellapé and Henry, new species (Figs 7, 8, 26–34)

Diagnosis

Rostrum short, not extending to procoxae; genal ridge thickened basally. Antennal segments III and IV brown, accented with red, with sparse, short, erect setae; apex of antennal segment IV pale brown.

Description

Male (Figs 26, 27, 30–34) (measurements: range (n = 2), followed by holotype in parentheses): Total length: 6.80–7.10 (6.30). Ant mimetic. Head black, clypeus pale brown, reddish at apex, with abundant short, silvery, decumbent setae and long, erect setae dorsally behind eyes. Head length: 2.00–2.04 (1.88); width: 1.44–1.48 (1.48). Anteocular length 1.20 (1.16). Postocular length 0.52 (0.48). Genal ridge thickened basally. Eyes slightly protruding. Antenniferous tubercles very short. Interocular space: 0.80 (0.76). Ocelli located between eyes, near the posterior margin. Interocellar
space: 0.52 (0.48). Vertex slightly rounded (Fig. 7). Rostrum brown, segments II and III paler, with a few semierect setae; not reaching procoxae. Rostral segment lengths: I 0.76 (0.72), II 0.68–0.72 (0.64), III 0.44 (0.44), IV 0.36–0.40 (0.40). Antenna: segment I pale brown, dark brown distally on dorsal three fourths; segment II brown, darker at base; segments III and IV brown, tinged with red, apex of segment IV pale.

Figs 35–38. (35, 36) *Distingphyses insignis*, adult female. (35) Dorsal aspect; (36) lateral aspect. (37, 38) *Pephysena levis*, adult male. (37) Dorsal aspect; (38) lateral aspect. This figure is published in colour in the online edition of this journal, that can be accessed via http://www.brill.nl/ise
brown, with abundant, short, decumbent setae and scattered, erect setae on segments III and IV, more abundant on IV. Antennal segment lengths: I 0.40 (0.36), II 1.24–1.28 (1.16), III 0.92–0.96 (0.84), IV 1.12–1.16 (1.16). Pronotum black, with gray pruinosity on anterior three-fourths of posterior lobe, posterior margin on posterior lobe pale brown, with short, decumbent, silvery setae, shorter on posterior lobe; humeral angles slightly produced. Collar length 0.08–0.12 (0.08), anterior lobe length 1.20–1.28 (1.04), posterior lobe length 0.64–0.72 (0.60). Collar width 0.60 (0.60), anterior lobe width 1.20–1.28 (1.08), posterior lobe width 1.56–1.60 (1.48). Humeral angles protruding. Scutellum and hemelytra with very short, decumbent setae. Hemelytron pruinose. Clavus black, except for pale brown anterior three-fourths of outer margin, with three rows of punctures, an incomplete row, and scattered additional punctures on distal half. Corium black, except on anterior two-thirds of lateral margins, anterior half medially, and a subapical macula pale brown; outer margin of corium weakly concave and crenate on anterior two-thirds. Membrane fuscous, with a fringe adjacent to distal corial margin continuing medially and a small subapical macula whitish. Pleura black, shagreened, shiny, except pruinose acetabular area of anterior legs; punctate, with very short setae. Procoxae with two spines. Mesofemora with a row of small tubercles over distal half. Coxae, pro-, meso-, and metatrochanters and bases of femora pale brown. Spines on profemora pale brown, dark at apex. Legs with very short, decumbent silvery setae. Abdomen black, with abundant, short, decumbent, silvery setae and sparse, long, erect setae.

Male genitalia: Pygophore (Figs 30, 31) with anterior margin of dorsal aperture rounded, inner projections subquadrangular, dorsal margin slightly declivent posteriorly. Parameres (Figs 32, 33) relatively short and slightly curved; shank with inner projection elongate, setae continuing to base of blade; outer projection small, with two long setae. Aedeagus (Fig. 34): vesica with two membranous lobes; body of ejaculatory reservoir rounded, pointed basally; gonoporal process with four turns, thin; conjunctiva with four small spines aligned posteriorly below the ejaculatory reservoir and three minute spines laterally on each side basally.

Female (Figs 7, 8, 28, 29) (n = 1): Total length 6.90. Head: length 2.00, width 1.48, anteoocular distance 1.16, postocular distance 0.48, interocular space 0.84, interocellar space 0.52. Antennal segment lengths: I 0.40; II 1.28; III 0.92; IV 1.16. Rostral segment lengths: I 0.76; II 0.72; III 0.44; IV 0.36. Collar length 0.08, anterior lobe length 1.36, posterior lobe length 0.68. Collar width 0.60, anterior lobe width 1.08, posterior lobe width 1.60.

Etymology
The specific epithet comes from the masculine form of the Greek noun “hadros”, meaning well developed, bulky, stout. We use this name to refer to the general aspect of the species, compared with the smaller A. arboricolous.

Distribution
Ecuador.
Discussion

This species is very similar to *A. arboricolous*. In addition to the characters mentioned in the specific diagnosis, *A. hadros* can be distinguish from *A. arboricolous* by the larger size, the more well-developed midventral carina, the somewhat flattened vertex with the eyes slightly protruding; the more protruding humeral angles, the more strongly constricted hemelytron, and the more well-developed spines on the profemora.

Type material

Holotype ♂, Ecuador, Napo Prov. (now Orellana Prov.), Tiputini, Biodiversity Station, 216 m., 0°37′55″S 76°08′39″W, 24 Oct. 1998, T. L. Erwin et al. collectors, insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants, Lot 1934, Trans. T-4 (held in trust at USNM). Paratypes: Ecuador: 1 ♂, same data as for holotype (USNM); 1 ♀, same data as for holotype, Lot 1935; 1 ♂, Napo [now Orellana Prov.], Res. Ethnica Waorani, 1 km. S. Onkone Gare Camp, Trans. Ent., 2 Oct. 1996, 220 m, 00°39′10″S 76°26′00″W, T. L. Erwin et al., insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants in terre firme forest, Lot 1712, Trans. T-6 (USNM).

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References


