

## New species of *Campylomma* and *Cyrtopeltis* (Hemiptera, Miridae) from Yemen

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New species are described from Yemen: *Campylomma oreophila*, *Ca. fallaciosa*, *Ca. rivulorum*, *Ca. viridissima*, *Cyrtopeltis echinopis*, and *Cy. asper*. *Tuponia diversa* Linnavuori from Eritrea and Yemen is redescribed.

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The article is based on field work made by the senior author in 1992 in the Republic of Yemen.

The collected material is the property of the American Museum of Natural History, but at present kept in the collection of REL.

### Subfamily Phylinae

#### *Campylomma oreophila* sp. n.

Fig. 1a–g

Type material: Yemen: Sana'a, ♂ holotype, 5 ♂ and 2 ♀ paratypes, II–III.1992; Sana'a, Wadi Al Ahgor, 1 ♂ paratype, 6.III.1992, Linnavuori, in coll. Linnavuori (AMNH). Other material: Yemen: Ta'izz, 1 ♀, 22–23. III.1992, Linnavuori.

Diagnosis: *C. oreophila* and the closely related *C. fallaciosa* belong to the *acaciae* group (Linnavuori 1975:108) in which the hind femora (Fig. 1a) are ornamented only with fine dark irroration; even spots bearing black bristles are not larger than the other dots. Moreover, the upper surface of the body is provided with, in addition to long semidecumbent hairs, an appressed silvery, more or less scale-like pubescence. The closely related species *C. acaciae* Linnavuori, 1961, (Eremian, extending from West Africa to the Arabian Peninsula and Palestine) is

smaller, length 1.75–2.50 mm, the appressed pale pubescence on the elytra is more abundant and the vesica (Fig. 2f–h) is dissimilar: gracile with basal part straighter than in the other species; apical process long and falcate; subapical process scoop-like, membranous with only outer margin sclerified.

Description: Length ♂ 2.75–3.25 mm, ♀ 2.50–2.75 mm. Pale grayish, often with yellowish tinge. Head yellowish or orangish; eyes reddish brown. Antennae yellowish, immaculate. Pronotum often with yellowish tinge. Base of scutellum bright yellow or orange, apical part, sometimes also middle of base, more or less infuscate. Elytra yellowish, in ♀ unicolored, in ♂ clavus, save base, and apical half of mesocorium faintly or distinctly infused; membrane and veins dark smoky. Under surface yellowish, thorax often with orangish tinge. Legs yellow-brown; femora with faint brown irroration, pattern of hind femur as in Fig. 1a; tibiae with small black setigerous dots, spines black. — Body in ♂ long and narrow, parallel-sided, in ♀ narrowly ovate, 2.6–2.7 (♂) or 2.4 (♀) × as long as broad at middle of elytra. Hair covering on upper surface long and blackish, vertex also with long erect black hairs, appressed pale pubescence present on clavus and adjacent part of corium. Head 0.72–0.77 (♂) or 0.70 (♀) ×

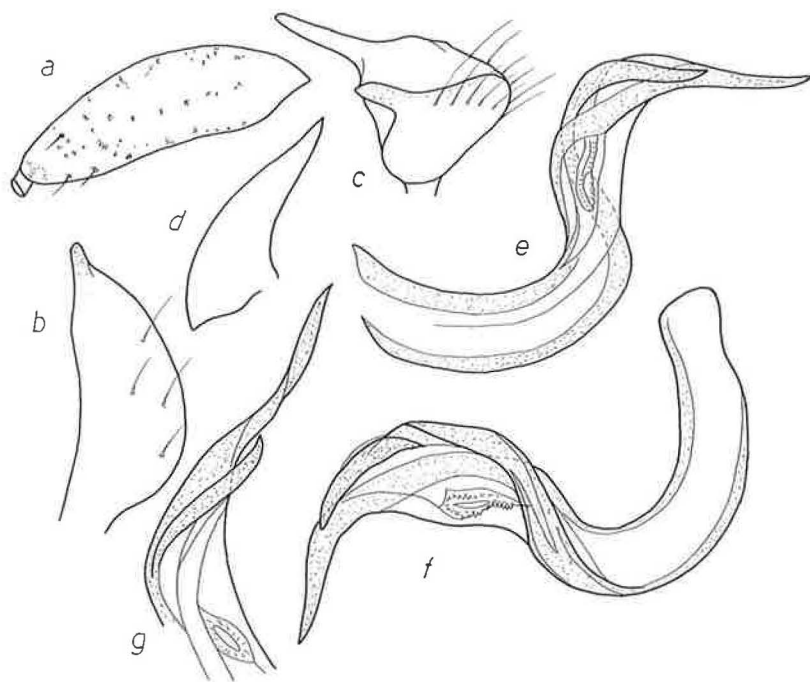


Fig. 1. *Campylomma oreophila* sp. n.: a) hind femur in ventral view; b) right style; c) left style; d) theca; e-f) vesica (of two exx) in lateral view; g) apex of vesica, in dorsal view.

as broad as basal width of pronotum; eyes in ♂ large, ocular index 0.97–1.10 (♂), 1.57–1.80 (♀). Antennae longish, proportions between joints 10:40:23:18 (♂), 9:35:24:25 (♀), 2nd segment in ♂ thicker than in ♀, 0.90–0.95 (♂) or 0.82–0.92 (♀) × as long as diatone, 0.66–0.71 (♂) or 0.57–0.65 (♀) × as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum about 2.3 (♂) or 2.33 (♀) × as broad as long in middle. — Male genitalia in Fig. 1b–g. Vesica robust, basal part U-shaped, apical part ending in a long falcate process, subapical appendage sclerified, long and narrow, lying close to apical process.

Biology: At lamps. At Wadi Al Ahgor found on *Acacia*.

### *Campylomma fallaciosa* sp. n.

Fig. 2a–e

Type material: Yemen: Abyan, Mayfa'ah, ♂ holotype, 3 paratypes, 7.VI.1992, Al Mahfid, 5 paratypes, 18.IV.1992; Hudaydah, Bajil, 3 paratypes, 19–20.III.1992; Dhamar, Dawran-Al Abeed, 1 paratype, 12.III.1992; Sana'a, 1 paratype, II–III.1992; Ta'izz, 1 paratype, 22–23.III.1992, Linnavuori, in coll. Linnavuori (AMNH).

Diagnosis: Resembling *C. acaciae* Linnavuori and *C. oreophila* n. sp. (see diagnosis of the latter) but with differently shaped vesica.

Description: Length ♂ 2.25 mm, ♀ 2.0–2.25 mm. Pale yellow or pale grayish ochraceous. Eyes reddish brown. Antennae yellowish, immaculate. Base of pronotum and scutellum often somewhat brighter yellow. Elytra yellowish, clavus and apical part of mesocorium rarely slightly embrowned; membrane brownish smoky. Under surface yellowish. Legs yellow-brown, pattern of femora as in the related species; tibiae with distinct black setigerous spots, spines black. — Body elongately ovate, considerably smaller and broader than in the preceding species, 2.26–2.42 (♂) or 2.4 (♀) × as long as broad at middle of elytra. Hair covering on upper surface yellowish to brown, appressed pale pubescence present on clavus and corium. Head (♂♀) 0.70–0.73 × as broad as basal width of pronotum; eyes relatively small, ocular index 1.37–1.53 (♂), 1.62–2.0 (♀). Proportions between antennal joints 7:28:19:14 (♂), 7:26:18:14 (♀), 2nd segment in ♂ thicker than in ♀, 0.76–0.83 (♂) or 0.70–0.80 (♀) × as long as diatone, 0.50–0.58 (♂♀) × as long

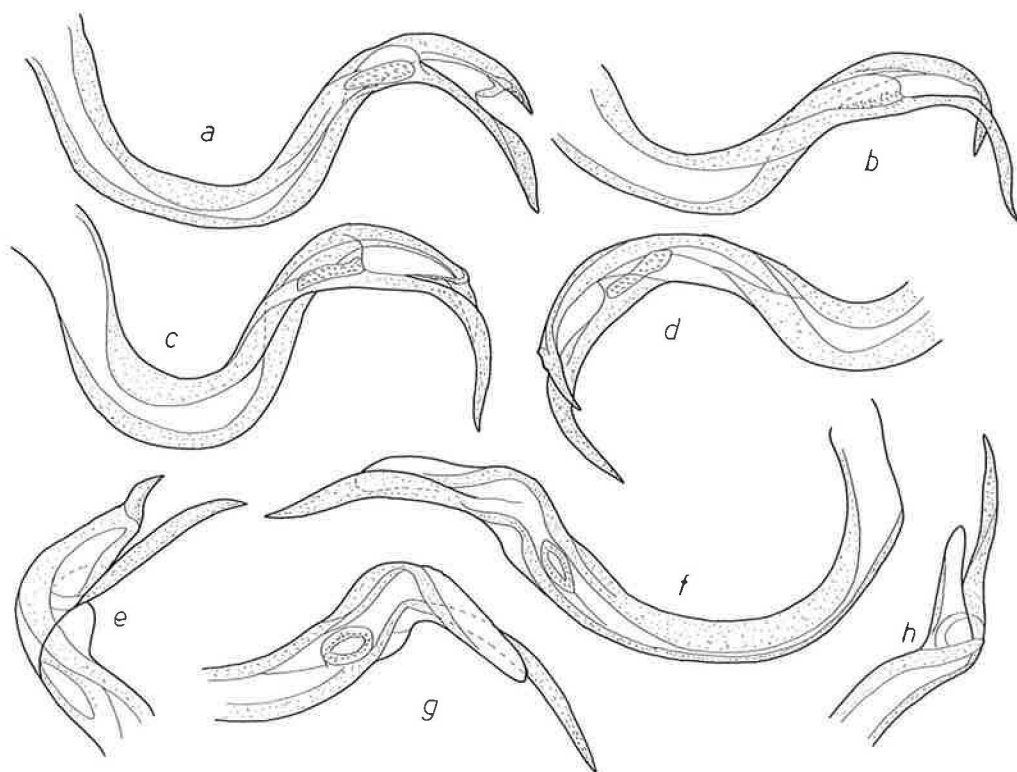


Fig. 2. *Campylomma fallaciosa* sp. n.: a–d) vesica (a ex from Dawran-Al Abeed, b–d of two ex from Mayfa'ah) in lateral view; e) apex of vesica in dorsal view. — *C. acaciae* Linnavuori: f) vesica in lateral view; g–h) apex of vesica in dorsal view.

as basal width of pronotum. Rostrum extending to hind coxae. Pronotum about 2.3 (♂) or 2.5 (♀) × as broad as long in middle. — Male genitalia (Fig. 2a–e): Vesica more slender than in *C. oreophila*, distinctly thicker than in *C. acaciae*, basal part U-shaped, apical process long, falcate; subapical appendage with a distinct sclerified claw-like terminal process, basal portion broad, only marginally sclerified.

Biology: At lamp.

### *Campylomma rivulorum* sp. n.

Fig. 3a–i

Type material: Yemen: Ta'izz, Wadi Warazan, ♂ holotype, several paratypes, 22.III.1992; Dhamar, Wadi Siham, Al Hajila-Uban, several paratypes, 12.III.1992, Linnavuori, in coll. Linnavuori (AMNH).

Diagnosis: Resembling *C. angustior* Poppius, 1914 (= *longicornis* Odhiambo, 1959) (East African) in the large size, coloring and long antennae. Distinguished by smaller eyes, thicker hind femora and shape of vesica. In *C. angustior* the vesica is provided with three long apical processes (Linnavuori 1975:106–107).

Description: Length 3.0–3.25 mm. Uniformly pale green. Eyes brownish gray. Antennae yellowish, 1st segment (Fig. 3a) with two small dark setigerous subapical spots and slight basal infuscation. Membrane of elytra pale brownish smoky, veins pale. Under surface pale, immaculate. Legs pale ochraceous. Femora with black and brown spots, pattern on under surface of hind femur as in Fig. 3b. Tibiae with distinct black setigerous spots, spines pale. — Body large, elongately ovate, about 2.4 × as long as broad at

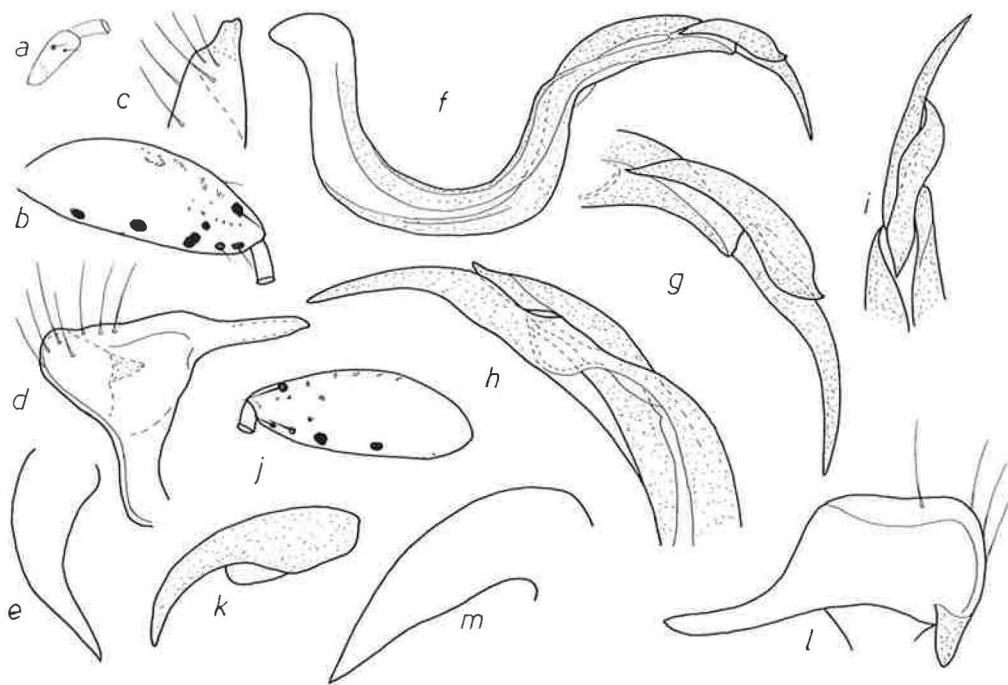


Fig. 3. *Campylomma rivolorum* sp. n.: a) 1st antennal segment; b) hind femur in ventral view; c) apex of right style; d) left style; e) theca; f) vesica in lateral view; g-h) apex of vesica in lateral view; i) apex of vesica in dorsal view. — *C. viridissima* sp. n.: j) hind femur in ventral view; k) claw; l) left style in dorsal view; m) theca.

middle of elytra. Hair covering on upper surface long, appressed and pale. Head 0.70–0.73 (♂) or 0.66–0.70 (♀) × as broad as basal width of pronotum; eyes relatively small, ocular index 1.36–1.43 (♂), 1.91–2.18 (♀). Antennae long, proportions between joints 9:54:35:21 (♂), 9:48:30:21 (♀), 2nd joint in ♂ incrassate, in ♀ gracile, 1.15–1.17 (♂) or 1.07–1.11 (♀) × as long as diatone, 0.81–0.86 (♂) or 0.73–0.76 (♀) × as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum 2.30–2.33 × as broad as long in middle. Hind femora incrassate, about 3.35 × as long as broad. — Male genitalia in Fig. 3c–i. Vesica basally broadly U-shaped, apex with two processes, the terminal process long and falcate, the subapical one broad; gonopore poorly delimited.

Biology: On an unidentified Compositae shrub growing at waterside in gravelly wadis.

### *Campylomma viridissima* sp. n.

Figs. 3j–m, 4a–c

Type material: Yemen: Sana'a, ♂ holotype, 1 ♀ paratype, II–III.1992, Linnavuori, in coll. Linnavuori (AMNH).

Diagnosis: Easily distinguished from all other *Campylomma* species by the bright green coloring.

Description: Length 2.75 mm. Subopaque. Bright green. Head yellow, eyes reddish brown. 1st and 2nd antennal joints yellow, joints 3 and 4 slightly darker, yellowish brown. Anterior part of pronotum and base of scutellum yellow. Base of pronotum, apex of scutellum and elytra bright green; membrane pale smoky, veins bright green. Under surface of head and thorax yellowish. Venter green. Legs pale ochraceous. Fore and middle femora with a few dark apical dots, hind femora with distinct black spots and small brown

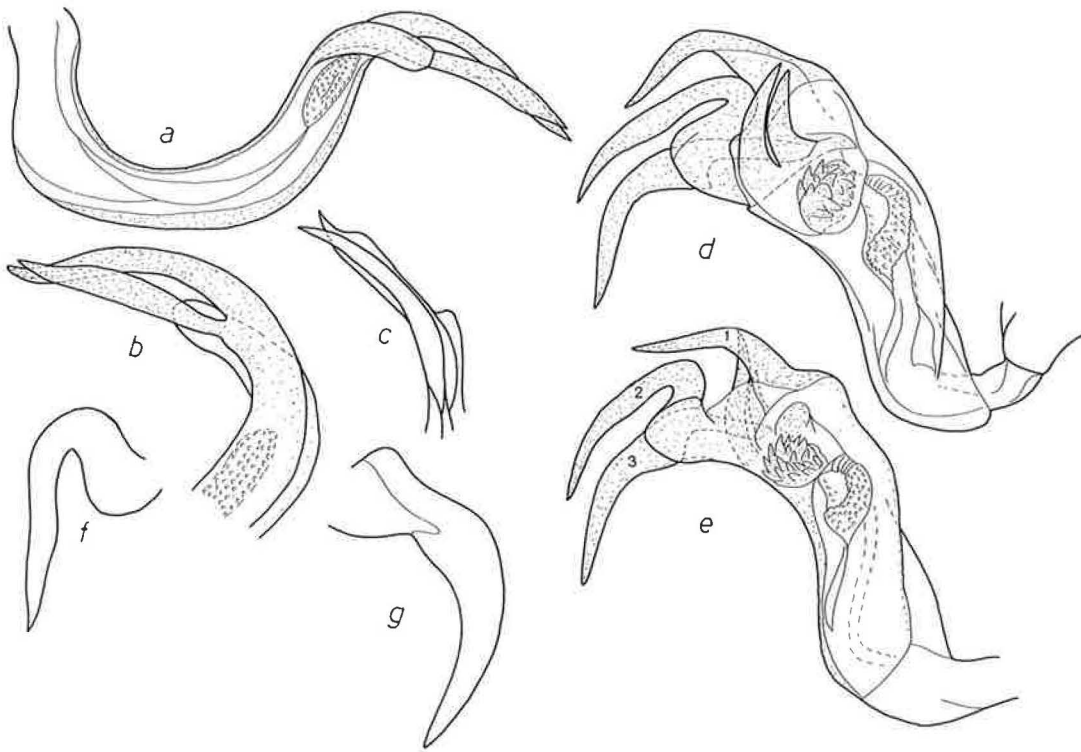


Fig. 4. *Campylomma viridissima* sp. n.: a) vesica in lateral view; b–c) apex of vesica in lateral and in dorsal view. — *Tuponia diversa* Linnavuori: d–e) vesica (exx from Wadi Surdud and Al Mahfid, respectively) in lateral view; f–g) processes 2 and 3 of vesica.

dots as indicated in Fig. 3j. Tibiae with small black setigerous spots, spines black. — Body elongately ovate, 2.6–2.7 × as long as broad at middle of elytra. Upper surface with long blackish hair covering, elytra also with appressed pale hairs. Head about 0.7 × as broad as basal width of pronotum; ocular index 1.62 (♂), 2.11 (♀). Proportions between antennal joints 8:33:22:16 (♂), 8:30:20:15 (♀), 2nd segment in ♂ incrassate, 0.87 (♂) or 0.81 (♀) × as long as diatone, 0.60 (♂) or 0.55 (♀) × as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum 2.3 × as broad as long in middle. Claw in Fig. 3k. — Male genitalia in Figs. 3l–m, 4a–c. Vesica in basal part broadly arcuate, apex with two long appendages of equal length, gonopore well delimited.

Biology: At lamps.

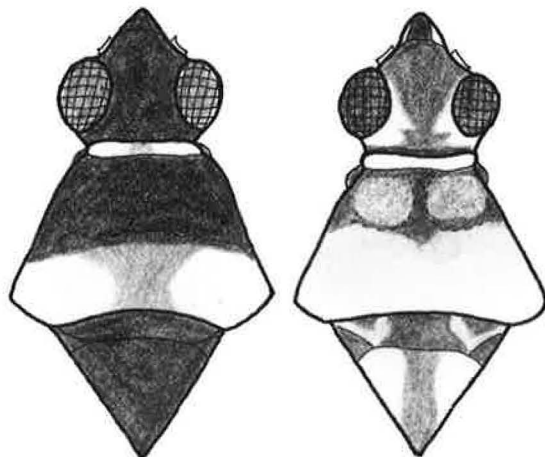


Fig. 5. Head and thorax of *Cyrtopeltis echinopsis* sp. n. left, *C. alkannae* Linnavuori right.

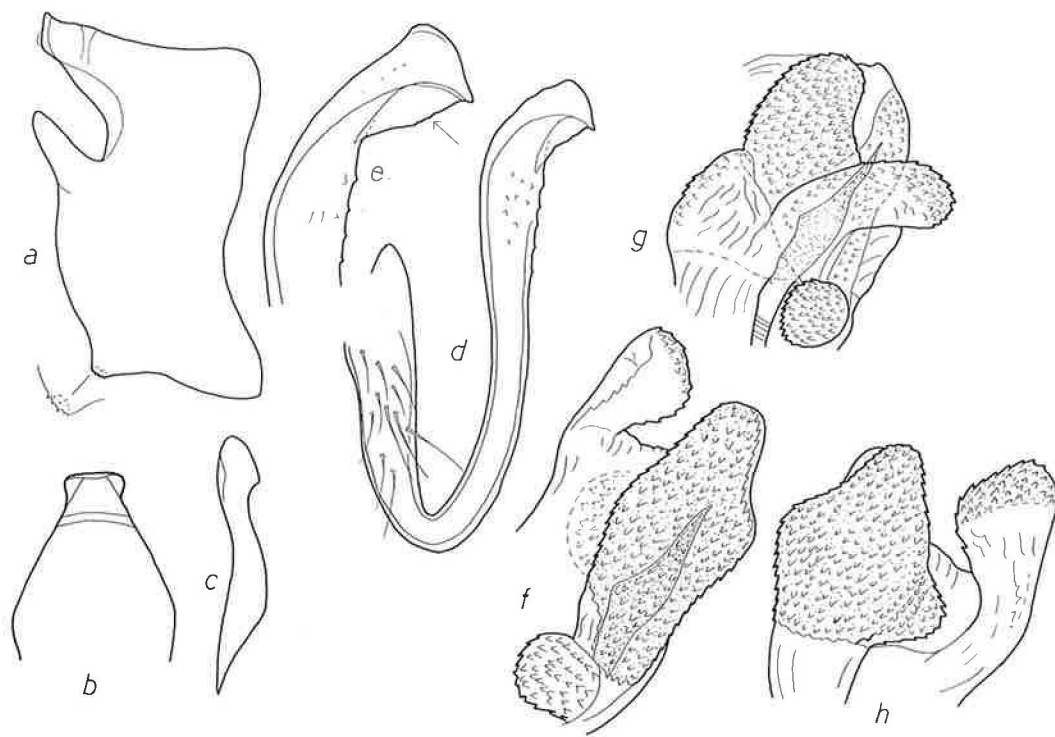


Fig. 6. *Cyrtopeltis echinopsis* sp. n.: a) pygofer, lateral view; b) apex of pygofer, dorsal view; c) right style; d-e) left style; f-h) sclerifications of vesica in different views.

***Tuponia (Chlorotuponia) diversa* Linnavuori, 1975**

Fig. 4d-g

*Tuponia (Chlorotuponia) diversa* Linnavuori 1975:113.

Type material: Eritrea: Dogali, ♂ holotype, many paratypes, 27-30.V.1963, Linnavuori, in coll. Linnavuori (AMNH). — Other material: Yemen: Marib, 1 ex, 24-25.IV.1992; Abyan, Al Mahfid, 6 exx, 18.IV.1992; Al Mahwit, Wadi Surdud near Khamis Bani Said, 1 ex, 20.III.1992, Linnavuori.

This species was described from Eritrea in Linnavuori 1975:113. An examination of some new material from Yemen revealed that the original illustration of the vesica was based on a damaged specimen. Consequently new illustrations are published in Fig. 4d-g. The vesica of *T. diversa* is distinctive: short and incrassate, provided with 3 long falcate apical appendages, 2

claw-like subapical spines and a coarsely dentate elevation in front of the gonopore.

Biology: On *Tamarix*.

Distribution: Previously known only from Eritrea.

**Subfamily Dicyphinae**

***Cyrtopeltis (Nesidiocoris) echinopsis* sp. n.**

Figs. 5, 6a-h

Type material: Yemen: Kuhlun Amer, 95 km N Sana'a, ♂ holotype, 17 paratypes, 13.III.1992, Linnavuori, in coll. Linnavuori (AMNH).

Diagnosis: *C. echinopsis* belongs to the *volucer* group of the subgenus *Nesidiocoris* Kirkaldy. The group is characterised by the shape of the pygofer

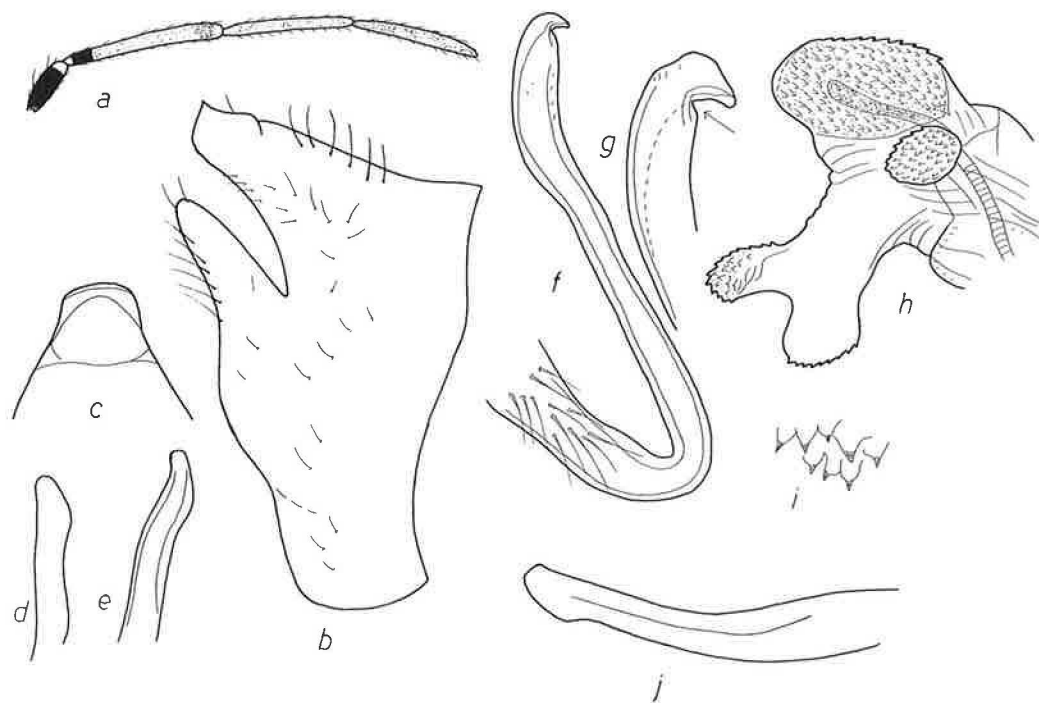


Fig. 7. *Cyrtopeltis brunneicollis* Linnavuori: a) antenna; b) pygofer in lateral view; c) apex of pygofer in dorsal view; d–e) right style; f–g) left style; h) sclerifications of vesica; i) denticulation of sclerified plates of vesica. — *C. alkannae* Linnavuori: j) right style.

(apex in dorsal view plug-shaped, right side with a long digitate dorsal process) and the very long hypophysis of the left style (Linnavuori 1975:12–14, Odhiambo 1961). A key to the group is given below. *C. echinopsis* is easily recognized by the coloring: pale green, with head, anterior lobe of pronotum and scutellum black, antennae uniformly yellowish, and elytra immaculate. The closest relative is *C. brunneicollis* Linnavuori, 1975 (Ethiopia, Mai Chew, alt. 3000 m, ♂ holotype, many paratypes, 1.VI.1963, Linnavuori, in coll. Linnavuori), which also lives on *Echinops*. In *C. brunneicollis* the antennae (Fig. 7a) are bicolored, yellow-brown with the 1st segment and a basal ring on the 2nd black. The pronotum is uniformly black. The male 3rd antennal segment is about as long as the 2nd. The pygofer (Fig. 7b–c) in lateral view is basally narrower. The hypophysis of the left style (Fig. 7f–g) is narrower and provided with a small hook-like apex and the sclerified apical part of the spiculum

of the vesica (Fig. 7h–i) is more gracile, narrowly club-like.

Description: Length 4.0–4.25 mm. Head, anterior lobe of pronotum and entire scutellum black. Antennal pits pale, eyes blackish brown. Antennae uniformly yellowish, only extreme base of 1st segment blackish. Collar of pronotum whitish, posterior lobe of disc laterally grayish, in middle embrowned. Elytra uniformly pale green in life, grayish green in dead specimens, only the very tip of cuneus dark; membrane pale smoky, veins yellowish or greenish. Under surface of head and pro- and mesothorax black; upper margins of metapleura also blackish, rest of metathorax, including osteolar peritremes, pale. Abdomen contrastingly green. Coxae greenish, other parts of legs yellowish, femora with traces of faint brown mottling, bases of tibiae dark, 3rd hind tarsomeres embrowned. — Body about 3.5–3.6 × as long as broad at middle of elytra. Hair covering of upper surface blackish. Head 0.60–





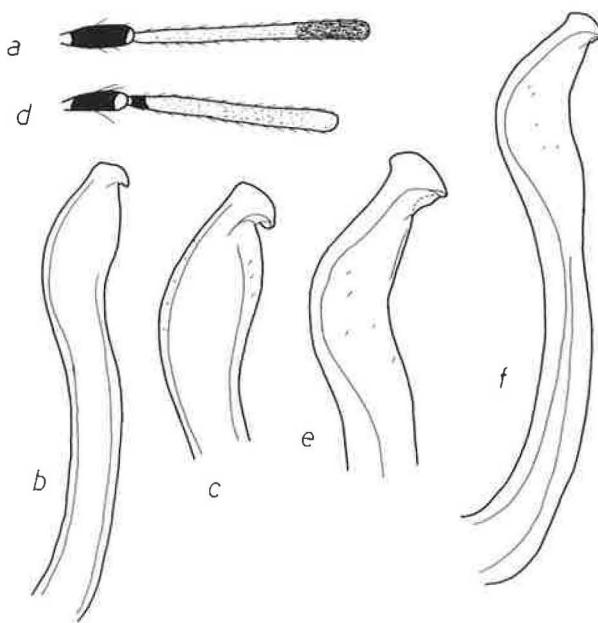


Fig. 9. *Cyrtopeltis callani* Odhiambo (ex from Lubumbashi): a) 1st and 2nd antennal joints; b-c) hypophysis of left style. — *C. montivaga* Linnavuori (paratype): d) 1st and 2nd antennal joints; e-f) hypophysis of left style.

- Not as above. Pattern as in Fig. 5 right ..... 4
- 3. Pronotum, save collar, uniformly blackish brown. Antennae (Fig. 7a) bicolored, yellow-brown with 1st joint, excluding apex, and base of 2nd black ..... *brunneicollis* Linnavuori, 1975 (Ethiopia)
- Only anterior lobe of pronotum black. Antennae uniformly pale ..... *echinopsis*
- 4. Antennae black, middle of 2nd joint and extreme base of 3rd sometimes slightly paler ..... 5
- Antennae bicolored ..... 7
- 5. Small species, length 3.75–4.0 mm. Head and callal area of pronotum dark brown ..... *leontion* Linnavuori, 1974 (Nigeria)
- Large species, length > 4 mm. Head and callal area of pronotum golden brown ..... 6
- 6. 2nd and 3rd antennal segments uniformly black. Left side of apex of pygofer (Fig. 8d) with a subapical knob directed laterad. Hypophysis of left style (Fig. 8a–b) straight and very gracile. Sclerifications of vesica in Fig. 8c ..... *volucer persimilis* Poppius, 1914 (Holosudanese, extending from the Cape Verde Islands to East and South Africa; the nominate form *volucer volucer* (Kirkaldy, 1902) on Island of Réunion)
- 2nd antennal joint in middle slightly paler, base of 3rd joint also pale. Pygofer as in *C. brunneicollis*, without a subapical knob on left side. Hypophysis of left style (Fig. 8e–f) considerably broader and shallowly curved. Sclerification of vesica in Fig. 8g ..... *kristenseni* Poppius, 1914 (the Red Sea hills in the Sudan, Eritrea and Yemen)

- 7. 2nd antennal joint (Fig. 9a) yellow-brown with apical quarter blackish. Left style in Fig. 9b–c ..... *callani* Odhiambo, 1961 (East Africa)
- 2nd antennal joint (Fig. 9d) yellow-brown with black basal ring ..... 8
- 8. 2nd antennal joint longer, about 1.12 (♂) or 1.03 (♀) × as long as basal width of pronotum. Hypophysis of left style (Fig. 9e–f) shorter, length 0.60–0.65 mm, broader and shallowly curved .... *montivaga* Linnavuori, 1975 (the Imatong Mts. in SE Sudan)
- 2nd antennal joint shorter, 0.90–1.04 × as long as basal width of pronotum. Hypophysis of left style (Figs. 8h, 10c) longer, length 0.75–0.83 mm, narrower and straighter. Other genitalia in Figs. 7j, 10a–b, d–f. On *Alkanna orientalis* ..... *alkannae* Linnavuori, 1975 (Yemen and the Asir Province in Saudi Arabia)

***Cyrtopeltis (Campyloneuropis) asper* sp. n.**  
Fig. 11a–c

Material: Yemen: Sana'a, Shallal Bani Matar, ♂ holotype, 5.III.1992, Linnavuori, in coll. Linnavuori (AMNH).

Diagnosis: Closely related to *C. pavoniae* Linnavuori, 1975 (Eritrea, Ethiopia, Somalia), which also displays the same basic characters: nearly unicoloured bases of tibiae, and charac-

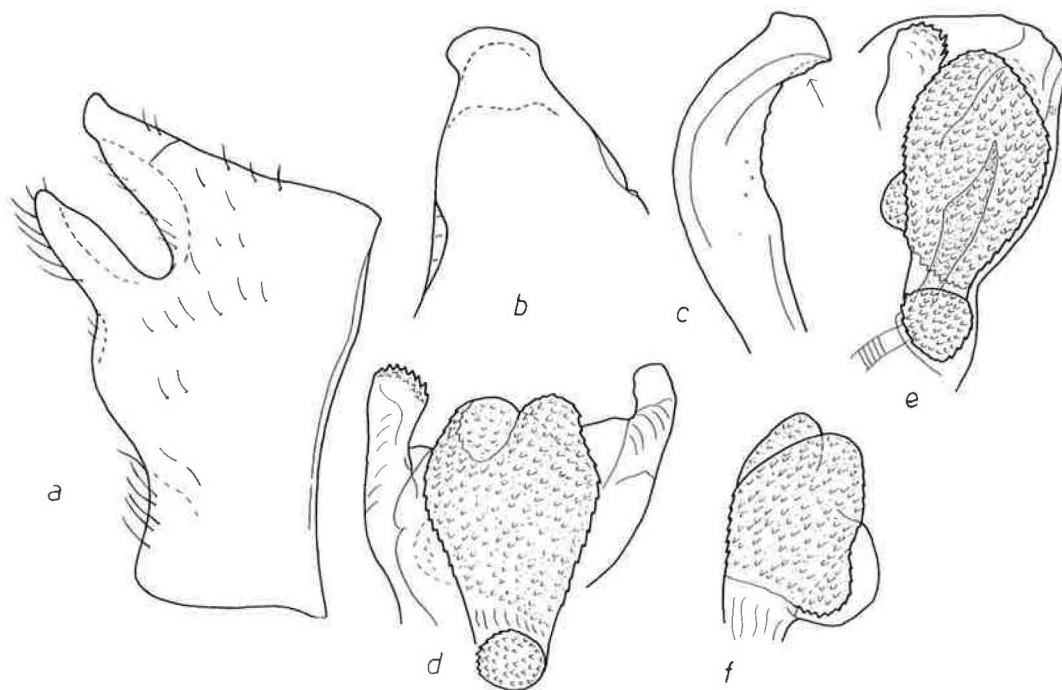


Fig. 10. *Cyrtopeltis alkannae* Linnavuori: a) pygofer in lateral view; b) apex of pygofer in dorsal view; c) apex of hypophysis of left style; d–f) sclerifications of vesica in different views.

teristic shape of left style and structure of aedeagus. *C. pavoniae* is, however, readily distinguished by the pale immaculate antennae, brown colouring with the apex of the cuneus sanguineous and the membranal veins reddish brown, larger eyes (ocular index about 1.48), and the male genitalia (Fig. 11f–h): Hypophysis of left style considerably thicker, theca with only faint elevations and structure of vesica different. *C. pavoniae* lives on *Pavonia glechomaefolia*.

Description: Length 2.5 mm. Shiny. Pale greenish. Head pale yellowish, tylus embrowned, frons with very faint golden lateral arcs, vertex with base and middle figure brownish; eyes brown. 1st antennal joint dark brown with apex and base whitish, 2nd joint yellowish with dark brown basal ring, extreme base and apex whitish, base of 3rd joint (other parts missing) brown. Pronotum with faint brown median band. Scutellum with

broad brown median band, basal angles with a brown spot. Elytra pale greenish, middle of clavus and apical margin of corium slightly infumed, extreme tip of cuneus brownish; membrane smoky, veins dark. Under surface pale yellowish. Legs pale yellowish, base of tibiae only faintly darkened, 3rd tarsomeres dark. Vestiture of legs pale. — Very small and gracile, body about  $4.1 \times$  as long as broad at middle of elytra. Hair covering on upper surface long and pale. Head  $0.6 \times$  as broad as basal width of pronotum; frons convex; eyes very small, ocular index 2.36. Proportions between antennal joints 10:34:?, 2nd joint  $1.42 \times$  as long as diatone,  $0.83 \times$  as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum  $2.16 \times$  as broad as long in middle, collar broad, lateral margins strongly diverging caudad, distinctly insinuated, humeral angles prominent, calli faintly elevated. — Male genitalia (Fig. 11b–e): Pygofer:

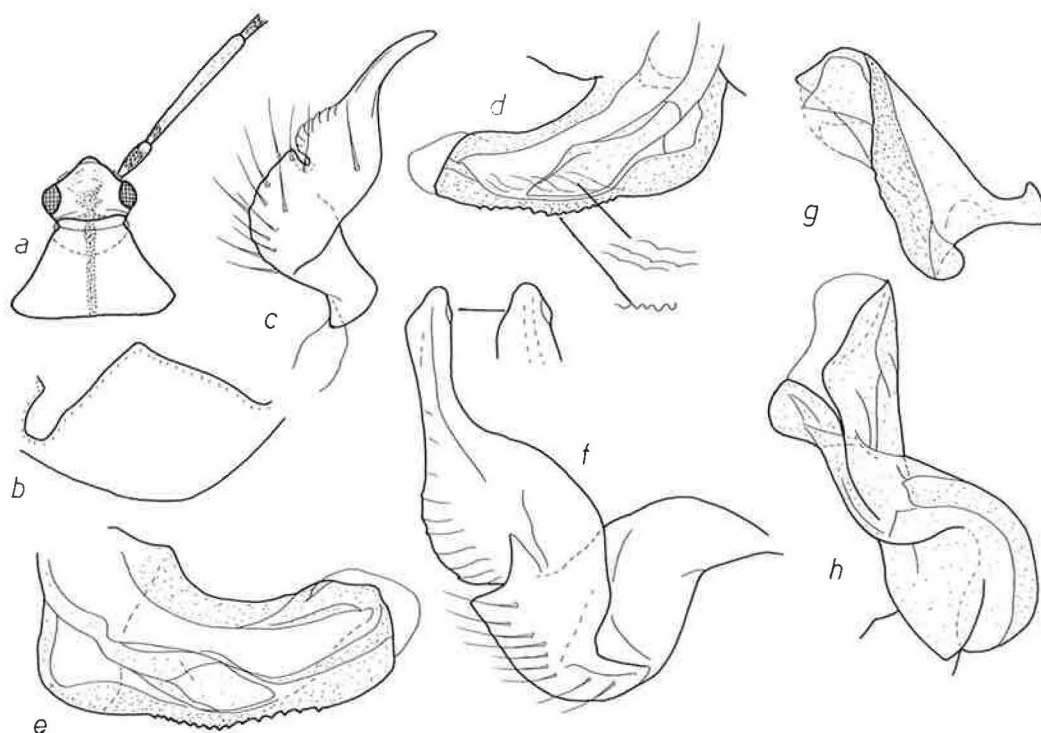


Fig. 11. *Cyrtopeltis asper* sp. n.: a) head and pronotum; b) ventral process of genital opening; c) left style; d-e) aedeagus in lateral view. — *C. pavoniae* Linnavuori: f) left style; g) theca in lateral view; h) vesica in lateral view.

ventral margin of genital opening with a broadly triangular lobe. Right style very small, straight. Left style with narrow hypophysis, outer margin behind hypophysis with narrow insinuation, margin in front of insinuation crenulate. Aedeagus short and robust; theca sclerified, ventral margin coarsely dentate, subventral area with undulating stripes; vesica with digitate, faintly sclerified process.

**Biology:** On *Acanthus arboreus* growing on a stony mountain side.

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