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This contribution is published to honor Dr. Amnon Freidberg, a scientist, a colleague and a friend, on the occasion of his 75th birthday.

Comments on the genus *Coelopacidia* Enderlein (Diptera: Tephritidae: Trypetinae: Adramini), with a key to known species

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ABSTRACT

Available information on the poorly documented Afrotropical and Oriental genus *Coelopacidia* Enderlein, including species identification, host plant association and distribution, is summarized. An identification key to the ten known species is provided.

KEYWORDS: Tephritidae, Trypetinae, Adramini, identification key, review, stem borers.

INTRODUCTION

The adramine genus *Coelopacidia* Enderlein contains nine described species of stem borers from Africa and Madagascar and one undescribed species from India (Hancock 1986; David *et al*. 2013). The identity of an additional species reported from Kakamega Forest in western Kenya as *Coelopacidia* sp. (Copeland *et al*. 2005) is uncertain, but it is likely to refer to an already described species such as *C. strigata* Bezzi. The genus can be identified using the key in Hancock (1986). It is poorly represented in collections and in need of revision. The purpose of this paper is to facilitate such a revision by reviewing the available information and to enable identification by providing a key to the ten known species.

RESULTS

Tribe Adramini Hendel, 1914

Genus *Coelopacidia* Enderlein, 1911

Coelopacidia Enderlein, 1911: 442. (Type species: *Coelopacidia madagascariensis* Enderlein, by original designation.)

Stenotrypeta Enderlein, 1920: 338. (Type species: *Stenotrypeta torrida* Enderlein, by original designation.)

Distribution: Afrotropical Region (mainland and Madagascar) and India.

Host plants: Larvae tunnel in the stems of *Senecio* and *Cineraria* (Asteraceae: Senecionae), and *Polemannia* (Apiaceae).

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Comments: Synonymy of *Stenotrypeta* under *Coelopacidia* was suggested by Munro (1957, 1960), but does not appear to have been formally indicated until Cogan and Munro (1980) listed them as such. *Coelopacidia* most resembles the Afrotropical genus *Trypanophion* Bezzi in being slender-bodied with almost completely hyaline or yellowish-tinted wings, in having 1 or 2 pairs of weak frontal and a single pair of orbital setae, two distinct apical spines on the mid tibia, no ventral spines on the femora and no sclerotized postcoxal metathoracic bridge. *Coelopacidia* differs in having 2 pairs of scutellar setae (1 pair [apicals] in *Trypanophion*), an anepisternal seta present (absent in *Trypanophion*) and with at most a whitish-pollinose medial stripe on the scutum (a distinct yellowish white medial vitta extending over scutellum in *Trypanophion*). The latter genus is represented by the sole species *T. gigas* Bezzi, 1924 (= *vestigiale* Hering, 1941) from Cameroon, Uganda, western Kenya and Zimbabwe and was discussed by Hancock (1986). The only known published illustrations were provided by Munro (1933, 1984) and David *et al*. (2013).

Key to known *Coelopacidia* species

1 Pterostigma black; scutum without a whitish pollinose medial stripe; postvertical seta present; dm–cu crossvein not infuscated 2
– Pterostigma yellow; scutum [where recorded] with a whitish pollinose medial stripe; postvertical seta often weak or absent; dm–cu crossvein often narrowly infuscated..... 3

2 Presutural, dorsocentral and prescutellar acrostichal setae present; 2 pairs of frontal setae; wing apex without a distinct apical infuscation [South Africa]..... ..... *C. marriotti* (Munro)
– Presutural, dorsocentral and prescutellar acrostichal setae absent; 1 pair of frontal setae; wing apex with a distinct apical infuscation [Malawi] .... *C. melanostigma* Bezzi

3 Wing apex without a distinct apical infuscation, at most with a narrow, linear costal band (Fig. 2)..... 4
– Wing apex with a distinct apical infuscation (Figs 3, 4)..... 6

4 Dorsocentral setae well developed and at level of supra-alar setae [Tanzania]... ..... *C. torrida* (Enderlein)
– Dorsocentral setae absent..... 5

5 Fore femur with a long and distinct apicoventral seta (Fig. 5) [Madagascar]..... ..... *C. madagascariensis* Enderlein
– Fore femur with a short and indistinct apicoventral seta (Fig. 6) [Kenya]..... ..... *C. carinata* Hendel

6 Dorsocentral setae well developed and at level of supra-alar setae [Equatorial Guinea, Cameroon] ..... *C. punctum* (Enderlein)
– Dorsocentral setae weak and hair-like or absent, if present and distinct then placed posterior to line of supra-alar setae (Fig. 1)..... 7

7 First antennal flagellomere blackish brown; scutum with medial pollinose stripe narrow throughout [Kenya, Tanzania]..... *C. apicalis* Hendel
– First antennal flagellomere fulvous; scutum with medial pollinose stripe twice as broad posterior to mesonotal suture as anterior to it..... 8
8 Brown apical spot subtriangular and as broad as tall in apical part of cell r_{2+3} (David *et al*. 2013: figs 57, 59) [India]..... Undescribed species
– Brown apical spot distinctly narrower than tall in apical part of cell r_{2+3} (Munro 1933: pl. III, fig. 2)..... 9
9 Dorsocentral setae distinct and moderate to strong (Fig. 1); 2 pairs of frontal setae; infuscation on dm–cu crossvein distinct [southern coastal South Africa] ..... *C. vivax* (Munro)
– Dorsocentral setae weak and hair-like or absent; 1 pair, rarely 2, of frontal setae; infuscation on dm–cu crossvein indistinct and pale [Ghana, Uganda, Kenya, Malawi, Zimbabwe, northern South Africa] .....*C. strigata* Bezzi

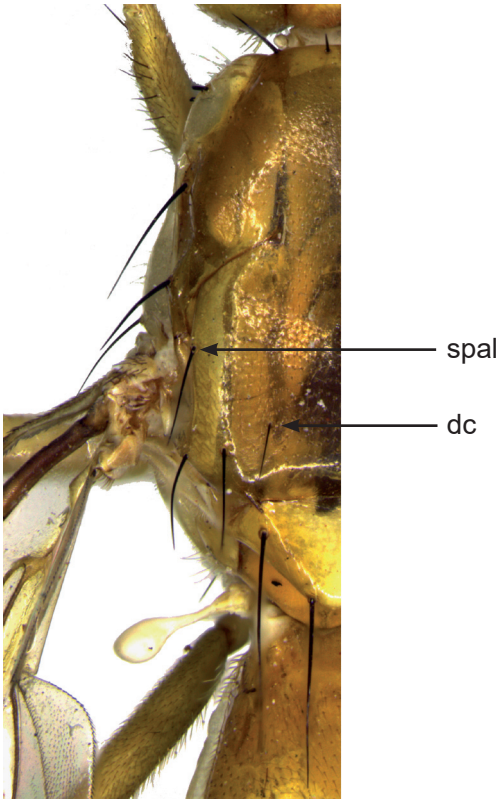


Fig. 1: *Coelopacidia vivax*, thorax, left side. Abbreviations: dc – dorsocentral seta, spal – supra-alar seta. (Photo courtesy A.-L.-L. Friedman)

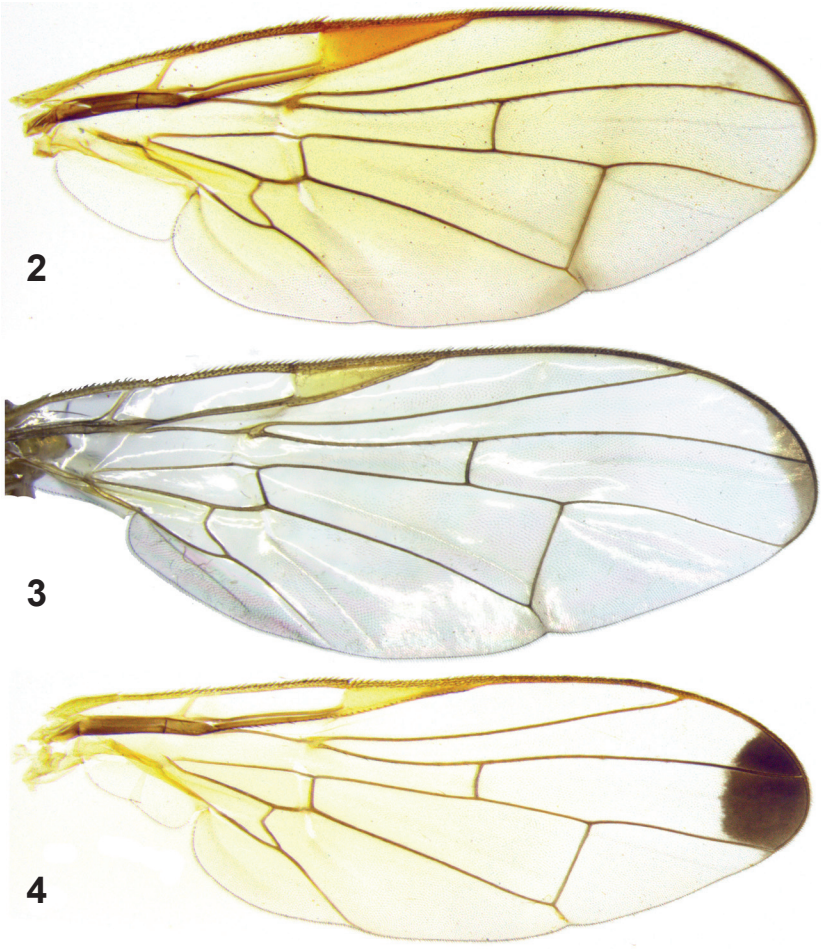
Coelopacidia apicalis Hendel, 1928

(Fig. 3)

Coelopacidia apicalis Hendel, 1928: 349. (Type locality: Shiraki [= Shirati], Tanzania.)
Coelopacidia sp. cf. *apicalis* Hendel: Copeland *et al*. 2005: 251 (Kenya).

Distribution: North-western Tanzania and south-western Kenya.

Comments: The close proximity of the three known localities, Shirati [on the border with Kenya on Lake Victoria] in Tanzania (Hendel 1928) and Sabatia and north of Kakamega Forest in Kenya (Copeland *et al*. 2005) [all near the NE corner of Lake Victoria], suggests that all these records are conspecific.



Figs 2–4: Wings of *Coelopacidia* spp.: (2) *C. madagascariensis*, (3) *C. apicalis*, (4) *C. punctum*. (Photos courtesy A.-L.-L. Friedman.)

Coelopacidia carinata Hendel, 1928

(Fig. 6)

Coelopacidia carinata Hendel, 1928: 349. (Type locality: Nairobi, Kenya.)

Distribution: Kenya.

Comments: This is one of four species (*C. carinata*, *C. madagascariensis*, *C. marriotti* and *C. torrida*) that lack a brown apical spot on the wing. *Coelopacidia carinata* has not been recorded since its original description.

Coelopacidia madagascariensis Enderlein, 1911

(Figs 2, 5)

Coelopacidia madagascariensis Enderlein, 1911: 442. (Type locality: Ambodimanga, Madagascar.)

Distribution: Madagascar.

Comments: Additional localities include Tsimbazaza (Antananarivo) and Lambomakandro (Tuléar) [the examined specimens are in the National Collection of Insects, Pretoria, South Africa].

Coelopacidia marriotti (Munro, 1935)

Stenotrypeta marriotti Munro, 1935: 24. (Type locality: Rockeries Section, Drakensberg, KwaZulu-Natal, South Africa.)

Distribution: South Africa (KwaZulu-Natal).

Host plant: Stems of *Polemannia grossulariifolia* in South Africa (Munro 1935).

Comments: This is one of two species with the black pterostigma, differing from the other, *C. melanostigma*, in lacking a dark apical wing spot. Munro (1935) indicated only a single mid-tibial apical spine and this, the Apiaceae host plant and

Figs 5, 6: Fore femur of *Coelopacidia* spp.: (5) *C. madagascariensis*, (6) *C. carinata*, holotype. (Photos courtesy A.-L.-L. Friedman.)

the presence of both presutural and prescutellar acrostichal setae suggest that the species might not belong in *Coelopacidia*.

Coelopacidia melanostigma Bezzi, 1920

Coelopacidia melanostigma Bezzi, 1920: 219. (Type locality: Ruo River, Chiromo, Limbe, Malawi.)

Distribution: Southern Malawi.

Comment: The species has not been recorded since its original description.

Coelopacidia punctum (Enderlein, 1920)

(Fig. 4)

Stenotrypeta punctum Enderlein, 1920: 339. (Type locality: Uelleburg, Equatorial Guinea.)

Distribution: Equatorial Guinea and Cameroon.

Comments: Having been known only from the type locality for almost 70 years, the species was collected by Amnon Freidberg in 1987 in Cameroon (Bafut, 20 km N of Bamenda, 17–24.xi.1987, in the collection of the Steinhardt Museum of Natural History, Tel Aviv University, Israel).

Coelopacidia strigata Bezzi, 1920

Coelopacidia strigata Bezzi, 1920: 218. (Type locality: Ruo River, Chiromo, Limbe, Malawi.)
Coelopacidia vivax: Copeland *et al*. 2005: 251 (Kakamega, Kenya). [Misidentification]
Coelopacidia sp.: Copeland *et al*. 2005: 251 (Kakamega, Kenya). [Identity uncertain]

Distribution: Ghana, Uganda, Kenya, Malawi, Zimbabwe and northern South Africa. The type locality is in southern Malawi. Known South African localities are Rustenburg, Pretoria, Rosslyn and Nelspruit (North West, Gauteng and Mpumalanga provinces: Munro 1929, 1933). Zimbabwean localities include Harare, Vumba, Chipinge and Chirinda Forest (Hancock 2003). Single records from Ghana (Obuasi) and Uganda (between Sezwa River and Kampala) were provided by Munro (1957). A western Kenya (Kakamega Forest) record of '*C. vivax*' (Copeland *et al*. 2005) is included here.

Host plant: Stems of *Senecio scoparius* in South Africa; larvae feed on the pith of the stem and pupate within the burrow (Munro 1929).

Comments: This species and the very similar *C. vivax* (Munro) appear to be allopatric in distribution, with the latter restricted to southern South Africa (Munro 1960). Weak dorsocentral setae are sometimes present (Munro 1960) as are, rarely, two pairs of frontal setae (*e.g.* in an examined female from Avondale, Harare, Zimbabwe, in Natural History Museum, Bulawayo, Zimbabwe); hence, the Kakamega Forest record of '*C. vivax*' is treated here as a misidentification of *C. strigata*. The Copeland *et al.* (2005) records of '*Coelopacidia* sp.' from Kakamega Forest, from a different collection, are also likely to be of *C. strigata*; the unavailability of a key made identification to species-level for that work impractical.

Coelopacidia torrida (Enderlein, 1920)

Stenotrypeta torrida Enderlein, 1920: 339. (Type locality: Langenburg, Lake Malawi, Tanzania.)

Distribution: Southeastern Tanzania.

Comments: The species has not been recorded since its original description.

Coelopacidia vivax (Munro, 1933)

(Fig. 1)

Stenotrypeta vivax Munro, 1933: 27. (Type locality: East London, Eastern Cape, South Africa.)
Coelopacidia strigata: Bezzi 1924: 473; Munro 1925: 45, 1926: 10. [Misidentifications: Munro (1933).]

Distribution: Southern South Africa. Known from Durban, Cedara, East London, Grahamstown and Hout Bay (KwaZulu-Natal, Eastern Cape and Western Cape provinces: Munro 1935, 1960). A record from Kenya (Copeland *et al*. 2005) is regarded as a misidentification of *C. strigata*.

Host plants: Stems of *Senecio juniperinus, S. paniculatus* and *S. pterophorus* in South Africa; larvae feed on the pith of the stem and pupate within the burrow (Munro 1926 [as '*C. strigata*'], 1935). Recorded as a pest of cultivated *Cineraria* at Durban (Munro 1960).

Comments: Munro (1933) illustrated the wing and later (Munro 1984) the spermatheca, male sternites and aedeagus.

Coelopacidia undescribed species

Coelopacidia cylindrica (Walker): Hardy 1977: 79; Kapoor 1993: 29, 90. [Misidentifications: Not *Trypeta cylindrica* Walker, 1852 (now *Chyliza cylindrica* (Walker), Psilidae) (Hancock & Drew 2005).]
Coelopacidia sp.: Hancock & Drew 2005: 5; David *et al*. 2013: 456.

Distribution: India. Precise location unknown.

Comments: Uncertainty over the name of this species was discussed by Hancock and Drew (2005). Further material and more precise locality details are required before a full description and naming of this species can be justified. It was discussed and illustrated by David *et al*. (2013).

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