

# First record from Costa Rica of the genus *Caenophanes* Foerster and description of a new species (Hymenoptera, Braconidae, Doryctinae)

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## Abstract

The genus *Caenophanes* Foerster is distinguished from the genus *Heterospilus* Haliday and one new species is described from Costa Rica which is the first species of *Caenophanes* described from the Western Hemisphere.

## Keywords

Parasitoid wasps, Braconidae, Doryctinae, *Caenophanes*, Costa Rica, taxonomy

## Introduction

The small genus *Caenophanes* Foerster has, for a long time, been considered a synonym of *Heterospilus* Haliday but was recently resurrected as a valid genus by Belokobylskij (1993) who placed it in the tribe Doryctini. It is similar to genera in the tribe Heterospilini because of the absence or weakness of fore wing vein 2RS, but is distinguished by having the first subdiscal cell of the fore wing closed at its apex. Belokobylskij (2006) presented a key to the World genera of Doryctinae which have an absent or weak fore wing vein 2RS.

Species of *Caenophanes* have been recorded from the Australasian, Oriental and Palaearctic Regions. During a recent study of the Heterospilini from Costa Rica (Marsh et al. 2013) one new species of *Caenophanes* was discovered. Specimens are also known from Mexico (Belokobylskij et al. 2011) and Wyoming (Scott Shaw, per. comm.) thus expanding the distribution of the genus to the entire Western Hemisphere. The purpose of this paper is to document the distribution of the genus *Caenophanes* for Central America and to present a description of the new species from Costa Rica.

## Materials and methods

Specimens were found among the large collection of Heterospilini borrowed from the University of Wyoming. All specimens were examined using a Wild M5 binocular stereomicroscope and fluorescent illumination. Specimens for the scanning electron micrographs were gold/palladium coated using a Denton Desk II TSC turbo-pumped sputter coater and the micrographs were made on a Philips XL30 Environmental Scanning Electron Microscope. Minor levels of adjustments to the images were performed in Adobe Photoshop versions CS3 and CS4, and the plate was prepared in the same program.

Terminology for morphological characters largely follows that of Sharkey and Wharton (1997) and Marsh (2002). Terminology for surface sculpturing follows that of Harris (1979), Marsh (2002) and Marsh et al. 2013.

Label data for holotypes and paratypes is listed exactly as indicated on the labels including misspellings, punctuation, abbreviations and absent spaces. Lines on each label are separated by a bracketed semi-colon [;].

All type material is deposited in the Insect Museum at the University of Wyoming, Laramie, WY (ESUW) and the Department of Entomology, University of Illinois (UILL).

## Taxonomy

### Genus *Caenophanes* Foerster

<http://species-id.net/wiki/Caenophanes>

*Synodus* Ratzeburg 1848:31. Preoccupied by *Synodus* Gronovius 1763 Latreille 1828.

*Caenophanes* Foerster 1862:236. New name for *Synodus* Ratzeburg.

*Caenophanes* Foerster: Shenefelt and Marsh 1976:1299 (as synonym of *Heterospilus*); Belokobylskij and Tobias 1986:39 (as subgenus of *Dendrosotinus*); Belokobylskij 1993:91 (stat. n.); Belokobylskij et al. 2004:27; Belokobylskij and Maeto 2009: 66–86 (key to species).

*Eurybolus* Thomson 1892:1855. Preoccupied by *Eurybolus* Ratzeburg 1844; synonymized by Viereck 1914.

*Heterospilus* (*Ratzsynodus*) Papp 1984:177. Synonymized by Tobias 1986.

*Dendrosotinus* (*Astigmatandrus*) Belokobylskij 1983:183. Synonymized by Belokobylskij and Tobias 1986.

**Type species.** *Bracon* (*Synodus*) *incompletus* Ratzeburg.

**Diagnosis.** Small to moderate size, 1.5–3.5 mm; occipital carina not meeting hypostomal carina; fore tibia with single row of small spines; hind coxa with distinct antero-ventral basal tooth; basal sternal plate (acrosternite) of metasomal segment 1 short, less than  $\frac{1}{4}$  length of tergum; fore wing second submarginal cell elongated, vein 2RS absent, vein r-m present, first subdiscal cell closed at apex, vein 3CU on same line as vein 1CU; hind wing vein SC+R present, male without stigma in hind wing.

**Distribution.** Australasian, Oriental, Palaearctic and Neotropical (**new record**).

**Biology.** Species from Australia have been reared from *Xylopsocus* sp. (Bostrichidae) and *Phoracantha* sp. (Cerambycidae) (Belokobylskij et al. 2004). No biological information is available for the species described below.

**Comments.** *Caenophanes* is similar to *Heterospilus* by having the fore wing vein 2RS absent, but is distinct by having the fore wing first subdiscal cell closed at the apex. A key to species was presented by Belokobylskij and Maeto (2009).

One new species from Costa Rica is described below which is the first record for the genus in the Western Hemisphere.

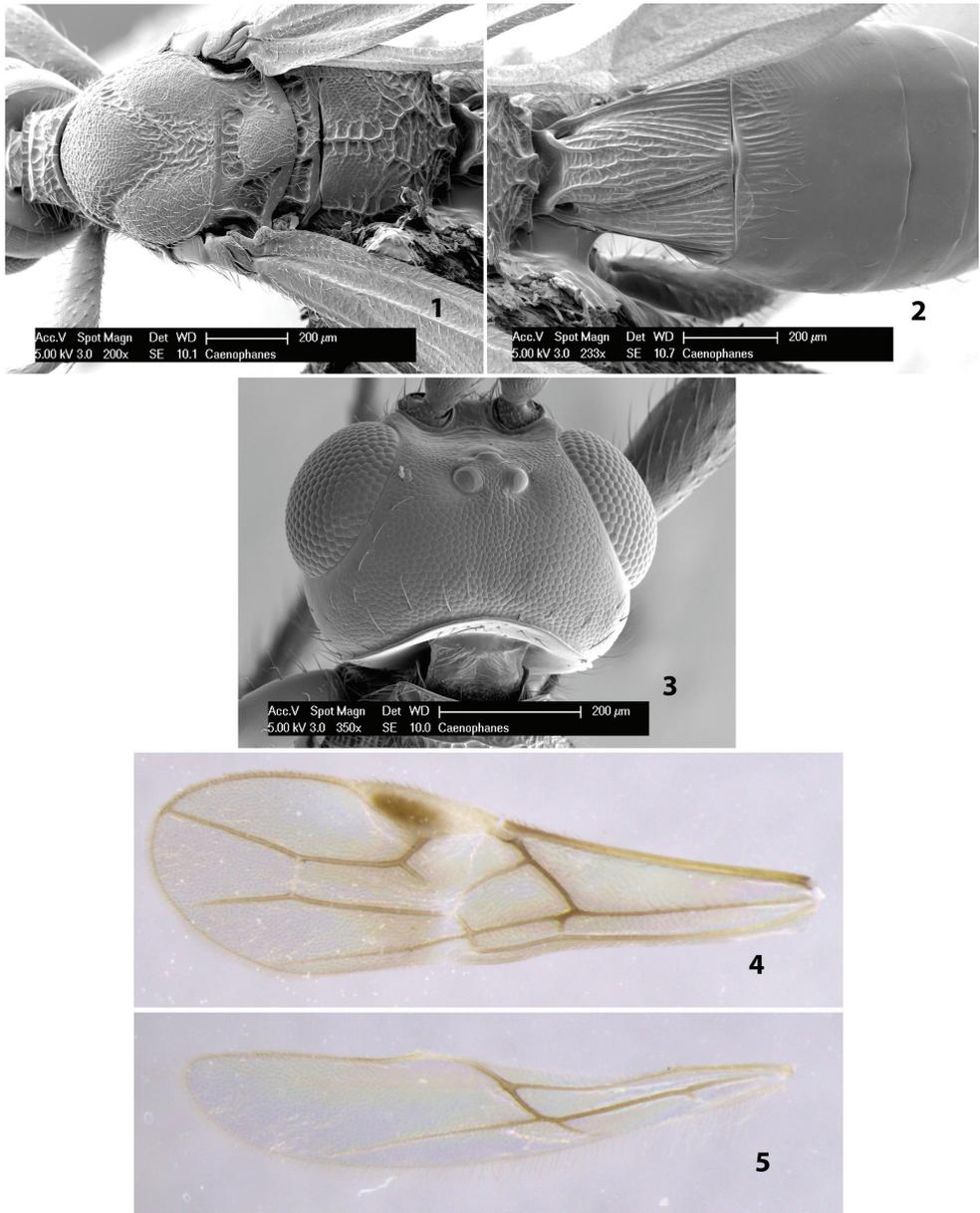
***Caenophanes costaricaensis* Marsh, sp. n.**

<http://zoobank.org/356727AB-5FDD-4BAD-9DD8-7D41DA84C9EE>

[http://species-id.net/wiki/Caenophanes\\_costaricaensis](http://species-id.net/wiki/Caenophanes_costaricaensis)

Figs 1–5

**Female.** *Body size:* 1.5–3.0 mm. *Color:* head honey yellow or light brown, ocellar triangle usually brown; scape honey yellow or yellow, flagellum brown; mesosoma brown with propleuron, mesopleuron, venter and mesoscutal lobes usually lighter brown or honey yellow; metasomal tergum 1 brown or dark brown, remainder of terga lighter brown or yellow; body rarely entirely honey yellow; legs yellow, femora and tibiae usually brown on apical half; wing veins brown, stigma brown with basal  $\frac{1}{3}$ – $\frac{1}{2}$  yellow. *Head* (Fig. 3): vertex coriaceous; frons coriaceous, often striate just behind antennae; face coriaceous-punctate with raised smooth area; temple in dorsal view somewhat broad, not sloping behind eye, width equal to  $\frac{1}{2}$  eye width; malar space greater than  $\frac{1}{4}$  eye height; ocell-ocular distance 2.5 times diameter of lateral ocellus; 20–28 flagellomeres, first flagellomere slightly longer than second. *Mesosoma* (Fig. 1): mesonotum usually slightly declivous anteriorly, occasionally not declivous and nearly on same line as pronotum; mesoscutal lobes coriaceous, usually covered by dense short hair; notauli scrobiculate, meeting posteriorly in triangular rugose area; scutellum coriaceous; pre-cutellar furrow with 3–5 cross carinae; mesopleuron weakly coriaceous; precoxal sulcus scrobiculate, shorter than mesopleuron; venter weakly coriaceous; epicnemial carina distinct and raised, expanded as a short flange behind fore coxae; propodeum with apical-lateral corners produced into distinct tubercle, basal median areas distinctly margined and coriaceous, basal median carina present, areola usually distinctly margined, areolar area rugose or carinate, lateral areas entirely rugose. *Wings:* fore wing



**Figure 1–5.** *Caenophanes costaricaensis* Marsh, n. sp.: **1** mesoscutum **2** metasomal terga **3** vertex, dorsal view **4** fore wing **5** hind wing.

(Fig. 4) vein r about  $\frac{1}{3}$  length of vein 3RSa, vein 1cu-a distinctly beyond vein 1M, first subdiscal cell closed at apex by vein 2cu-a which is usually interstitial with vein m-cu, vein 3CU on same line as vein 1CU, vein 2CU absent; hind wing (Fig. 5) vein SC+R present, vein M+CU shorter than vein 1M. *Legs*: hind coxa with distinct antero-ventral

basal tooth; fore tibia with distinct single row of short stout spines along anterior edge. *Metasoma* (Fig. 2): first tergum longitudinally costate, often rugose medially, length slightly greater than apical width; second tergum usually with short costae at extreme base, often nearly entirely smooth; anterior transverse groove weak and curved or sinuate, occasionally absent entirely; posterior transverse groove absent; third and following terga smooth; ovipositor about half as long as metasoma.

**Male.** Essentially as in female; propodeum usually dark brown, metasomal terga 1 and 4–7 dark brown, terga 2–3 yellow.

**Holotype female.** Top label (white, printed) - Costa Rica: Guanacaste [;] Est. Biol. Maritza, 600m [;] xi.1996, C. Zuniga, Malaise [;] L.N. 326900–373000 #47554; second label (red, printed) - HOLOTYPE [;] *Caenophanes* [;] *costaricaensis* Marsh. Deposited in ESUW.

**Paratypes.** 4 ♀♀, top label - Costa Rica: Guanacaste [;] Santa Rosa Natl. Park [;] 300m, ex. Malaise trap [;] Site: SE-6-C [;] Dates: 16.xi–9.xii.1985, 18.i–8.ii.1986 and 6–27.ix.1986 [;] I.D. Gauld & D. Janzen; second label - [SE] Bosque San Emilio [;] 50yr old deciduous forest [;] [C] more or less fully [;] shaded as possible (ESUW). 2 ♀♀, top label - Costa Rica: Guanacaste [;] Santa Rosa Natl. Park [;] 300m, ex. Malaise trap [;] Site: BH-9-O [;] Dates: 20.xi.86–10.i.1987 and 28.xii.85–18.i.1986 [;] I.D. Gauld & D. Janzen; second label - [BH] Bosque Humedo [;] mature evergreen dry forest [;] [O] in clearing, fully [;] isolated part of day (ESUW). 1 ♀, top label - Costa Rica: Guanacaste [;] Santa Rosa Natl. Park [;] 300m, ex. Malaise trap [;] Site: blank [;] Dates: 20.xii.86–10.i.1987 [;] I.D. Gauld & D. Janzen; second label - [BH] Bosque Humedo [;] mature evergreen dry forest [;] [C] more or less fully [;] shaded as possible (ESUW). 1 ♂, top label - Costa Rica: Guanacaste [;] Santa Rosa Natl. Park [;] 300m, ex. Malaise trap [;] Site: H-1-O [;] Dates: 29.xi–20.xii.1986 [;] I.D. Gauld & D. Janzen; second label - [H] open regenerating [;] woodland <10 years old [;] [O] in clearing, fully [;] isolated part of day (ESUW). 1 ♀, COSTA RICA Guanacaste [;] ACG, Santa Rosa Station [;] 10.837°N 85.620°W 300m [;] i–xii.2008, malaise trap [;] D.H.Janzen&W. Hallwachs [;] DNA#AW123 (UILL). 1 ♀, top label - Costa Rica: BH-10-C [;] Guanacaste Province [;] Santa Rosa Natl. Pk. [;] 300m. (dry season) [;] 10–31 January 1987; second label - Bosque Humedo, mature [;] dry forest with high [;] proportion evergreen [;] species, fully shaded [;] Townes style Malaise [;] Ian Gauld coll. (ESUW). 1 ♀, top label - Costa Rica: Guanacaste [;] Santa Rosa National Pk. [;] 300m, Malaise, Ian Gauld [;] 10–31.i.1987; second label - Bosque San Emilio [;] 50yr old deciduous [;] forest [;] full shade; third label - SE-6-C [;] 10-31.i.87 (ESUW). 1 ♀, Costa Rica: Limon [;] 30 km N Cariari, 100m [;] Sector Cocori, Malaise [;] iii.1995, E. Rojas #4524 [;] L.N. 286000-567500 (ESUW). 1 ♀, Costa Rica: San Jose [;] San Antonio de Escazu [;] 1300m, iii–iv.1998 [;] W.Eberhard & P.Hanson (ESUW). 1 ♂, Costa Rica, Carthago Pr. [;] Dulce Nombre, Vivero [;] Linda Vista, 1300 m [;] 1994:x–xi, P. Hanson (ESUW).

**Etymology.** Named for the country of Costa Rica where the specimens were all collected.

**Comments.** This species does not easily run to any species in the key presented by Belokobylskij and Maeto (2009). It is similar to *nukunu* (Marsh and Austin) (Austin et al. 1994) because of the expanded epicnemial carina but differs in color and by having the ovipositor shorter than the metasoma.

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