

Key to Genera of Trigonalysidae that may be found in Costa Rica

1. Tyloides not present, or female2
- Tyloides present (males only)8
2. Maxillary and labial palpi rudimentary. Antenna with 14 (rarely 11-16) flagellar segments*Nomadina*
- Maxillary palpus extends beyond mandibles, labial palpus normal. Antenna with 15-26 flagellar segments3
3. Antenna with 15-18 (rarely 19) flagellar segments. Metasoma smooth, shiny; thorax strongly rugose punctate. Hind trochanter two-segmented ..*Bareogonalos*
- Antenna with 19-26 flagellar segments. If metasoma smooth and shiny then thorax not strongly punctate. Hind trochanter apparently 3 segmented (second segment diagonally divided)4
4. Metasomal tergites and sternites very smooth and thin (may be partially transparent), tergites folded under, intercalating with sternites. Propodeum areolate-rugose, covered with network of lines. Carina around propodeal foramen thick, partially double-walled, "U" or half circle shaped. Mimics ichneumonid: antenna banded, when viewed dorsally head and thorax black with markings white (females and faded males) or yellowish white (males); metasoma reddish brown, may have extensive light or dark markings*Orthogonalys*
- Metasomal tergites and sternites often punctate, thick, tergites overlap sternites laterally in a straight line, without overlapping sternites ventrally. Propodeum punctate, or smooth, sometimes with concentric lines around foramen, but not covered with network of lines. Carina around propodeal foramen thin (though sometimes tall), and 'V' or 'U' shaped. Various coloration, not as above5
5. Eye viewed from below with hind margin behind mandible. Propleuron and mesopleuron yellow and entire forewing amber; in some species vertex behind ocelli flat, at back abruptly angled towards occipital carina; propodeal foramen evenly curved dorsally. Very rare*Xanthogonalos*
- Eye with hind margin even with middle of mandible (less commonly at hind edge of mandible) (fig 1). Propleuron dark, mesopleuron dark or dark with yellow markings (except *Labidogonalos* and Genus B, which also have only the leading half of the forewing amber)6
6. Antenna spindle-shaped. No yellow or light markings on propodeum. Frons between antennae broad and flat, wider than the length of the first flagellomere. Tyloides absent7
- Antenna filiform. Often with yellow on propodeum. Frons between antennae usually narrower and not as flat as described above. Tyloides present in male8

7. Wings amber or hyaline, not very dark. Parasitoids of solitary wasps and of parasitoids of Lepidoptera. Vertex curving evenly towards occipital carina*Lycogaster*
- Wings, or part of wings, very dark or violaceous. Parasitoids of social wasps. Vertex sharply angled above occipital carina*Seminota*
8. Gena wide, extending far beyond mandible when viewed from below (fig. 1a). Occipital carina overlaps sharp genal angle when viewed from below; occiput sharply excavated all the way to mandible except in Genus A (fig. 1). Glossy between antennae and above clypeus. Frons strongly angled between antennae when viewed from side. Female armature, if present, on third sternite. Male tyloides oval or round, less than half the flagellomere length9
- Gena narrow, especially near mandible, not extending far beyond mandible when viewed from below (fig. 1b). Occipital carina not forming top of a sharp angle with gena and occiput, occiput not sharply excavated (fig. 1b). Punctate above clypeus. Flat or slightly angled between antennae in side view. Female armature, if present, on second sternite. Male tyloides elongate, usually more than half the flagellomere length11
9. Occipital carina points toward hypostomal carina and then bends and parallels hypostomal carina to reach mandible. Occiput not sharply excavated near mandible. Black or very dark brown, often with white markings. Most specimens with marginal cell and parts adjacent to it darkened. Mexico, known only from femalesGenus A
- Occipital carina goes straight to mandible edge. Occiput sharply excavated along occipital carina all the way to mandible10
10. Body brown and yellowGenus B
- Body black and white*Trigonalys*
11. Propleuron and mesopleuron yellow*Labidogonalos*.
- Propleuron dark, mesopleuron dark or dark with yellow markings*Taeniogonalos*

Synopsis of Costa Rican Taxa

Orthogonalys is known from North and South America, but not Central America. One species of *Bareogonalos* is known from only a few specimens from southern Mexico. Genus A is known from females collected in Mexico. Genus B was previously placed in *Labidogonalos* and looks very similar, but the shape of the head and tyloides show it is more closely related to *Trigonalys*. It includes the species '*Trigonalys maculifrons*'.

Labidogonalos. The genus is known only from Mexico and Central America. *Labidogonalos* mimics *Agelaia areata* (Vespidae) and so is more elongated than most Trigonalidae.

Lycogaster. Species of this genus mimic *Brachygastra* (Vespidae), and in the New World, occur from Costa Rica north to Canada. In Costa Rica most specimens have been collected from January to April.

Nomadina. This genus is limited in its distribution to the Neotropical region, but related genera are found in the Philippines and Taiwan. Species have been reared from *Stelopolybia* and *Polybia* (Vespidae). Specimens have been collected in Costa Rica east of San Jose at an altitude of 1600 metres, and others have been collected in the mountains of western Panama.

Seminota. This genus is only known to occur in Central and South America. *Seminota* mimics one of its host wasps, *Parachartergus apicalis*, and most collections have been made by rearing individuals from vespid nests.

Taeniogonalos. It is impossible to define the genera *Poecilogonalos*, *Nanogonalos* and *Taeniogonalos* so that they are each monophyletic. One species, apparently the same as the only North American species, *Taeniogonalos costalis* (Cresson), mimics *Polybia occidentalis* (Vespidae). D. H. Janzen (pers. comm.) has reared it in northwestern Guanacaste from both tachinid and ichneumonid parasitoids of various large Lepidoptera found on eight families. This variety indicates that *Taeniogonalos* is not specific for oviposition, intermediate, or definitive host.

Trigonalys is known from a few specimens from Central America. *Trigonalys melanoleuca* is common in South America, and does not have the projection from the third metasomal sternite found in female *Trigonalys championi* in Costa Rica.

Xanthogonalos. This is a Neotropical genus, but it is known from too few specimens to characterize it adequately, and to differentiate it from the more commonly collected and superficially similar looking *Labidogonalos*. The shape of the aedeagus does not support placement of *Xanthogonalos* by Schulz (1907) in a separate subfamily with *Seminota*.