

## Keys to Trigonalalyidae by Region

### Key to the species of Canada and the United States

1. Dorsellum pyramidal, distinctly raised and usually bifid and yellow. Hind trochanters two-segmented. Parasitoids of yellowjackets ...*Bareogonalos canadensis* (Figs 1-5)
  - Dorsellum flat. Hind trochanters three-segmented. From solitary hosts .....2
2. Dorsellum and propodeum all black (or very dark brown), without light markings.
  - Antenna spindle-form .....*Lycogaster pullata*
  - Dorsellum and usually propodeum with light markings. Antenna filiform .....3
3. Antennae black with white (or light yellow) band in middle. Metasoma thin, often entire metasoma orange. The only North American species without female armature. Male without tyloids .....*Orthogonalys pulchella*(Figs 6-9)
  - Antennae without light-colored band. Metasoma stout, dark, with transverse yellow stripes. Female with armature. The only North American species in which the male has tyloids (Fig. 10) .....*Taeniogonalos gundlachii* (Fig. 17)

### Key to New World Genera

1. Tyloids not present, or female. Antennae filiform or thickened .....2
  - Tyloids present, antennae filiform<sup>1</sup>. (males only) .....8
2. Maxillary and labial palpi rudimentary. Antenna 16-segmented .....*Nomadina*
  - Maxillary palpus extending beyond mandibles, labial palpus normal. Antenna with 17-28 segments .....3
3. Antenna with 17-20 (rarely 21) segments. Metasoma smooth, shiny and thorax strongly areolate. Hind trochanter two-segmented .....*Bareogonalos*
  - Antenna with 21-28 segments. If metasoma smooth and shiny then thorax not strongly punctate. Hind trochanter apparently 3-segmented (second segment diagonally divided) .....4
4. Metasomal terga and sterna very smooth and thin (may be partially transparent), terga folded under, intercalating with sterna. Propodeum areolate-rugose, covered with network of lines. Carina around propodeal foramen thick, partially double-walled, "U" or half circle shaped. Ichneumonid-like: antenna banded, when viewed dorsally head and thorax black with markings white (females and faded males) or yellowish white (males); metasoma orange, may have extensive light or dark markings .....*Orthogonalys*
  - Metasomal terga and sterna often punctate, thick, terga overlap sterna laterally in a straight line, without overlapping sterna 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. Coloration various, not as above .....5

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<sup>1</sup>One male from Costa Rica has antennae like *Lycogaster* but with tyloids, the rest of its characters as in *Trigonalyini*.

5. Eye with sparse pubescence visible at 30 X. Eye in lateral view often with posterior margin behind mandibular insertion (Fig. 32). Propleuron and mesopleuron yellow and entire forewing pale amber; in some species vertex behind ocelli flat, posteriorly abruptly angled towards genal carina; propodeal foramen evenly curved dorsally. Very rare in collections .....Xanthogonalos
- Eye not pubescent. Eye with posterior margin even with middle of mandibular insertion (Fig. 31), less commonly at posterior edge of mandibular base. Propleuron dark, mesopleuron dark or dark with yellow markings (except Taeniogonalos ornata and some Trigonalys, which also have only the leading half of the forewing pale amber) .....6
6. Antenna spindle-shaped. No yellow or light markings on propodeum. Supra-antennal elevation reduced, never lobed. Frons between antennae broad and flat, wider than the length of the first flagellomere. Tyloids absent .....7
- Antenna filiform. Often with yellow on propodeum. Supra-antennal elevation variable. Frons between antennae usually narrower and not flat. Tyloids present in male .....8
7. Wings amber or hyaline, not very dark. Head punctate, vertex curving evenly towards occipital carina. Parasitoids of solitary wasps and of parasitoids of Lepidoptera .....Lycogaster
- Wings, or part of wings, very dark or violaceous. Head smooth, vertex sharply angled above occipital carina. Parasitoids of social wasps .....Seminota
8. Genal carina not forming a sharp ridge between gena and occiput, occiput not sharply excavated (Fig. 23). Frons flat or slightly angled between antennae in side view. Punctate above clypeus. Gena usually narrow (Fig. 31), often punctate, immediately above mandible and behind lower third of eye. Female armature, if

- present, on sternum II. Male tyloids elongate, usually more than half flagellomere length .....*Taeniogonalos*
- Genal carina forming a sharp ridge between gena and occiput when viewed from below; occiput usually sharply excavated all the way to mandible (Fig. 22). Frons strongly angled between antennae in side view. Glossy above clypeus between antennae. Gena wide and shining immediately above mandible and behind lower third of eye. Female armature, if present, on sternum III. Male tyloids oval or round, less than half the flagellomere length .....9
9. Genal carina pointing towards hypostomal carina and then bending parallel to hypostomal carina to reach mandibular base. Occiput not sharply excavated near mandible. Mexico, known only from females .....Undescribed Genus
- Genal carina extending straight to mandibular base. Occiput sharply excavated along genal carina all the way to mandible. Central and South America .....*Trigonalys*

## Key to African Genera

1. Antenna banded. Propodeum, at least above propodeal foramen, rugose reticulate (wrinkled network). Genal carina fading before hypostomal carina, not ending at mandibular base. Males without tyloids. Wings hyaline, submarginal cell II petiolate to subpetiolate. Mesosoma predominately orange. Metasoma without armature. Metasomal plates thin and may dry distorted .....*Orthogonalys*
- Antennae not banded. Other characters various, but not fitting above description. Wings often with dark markings; females often with armature; males often with tyloids .....2
2. Area immediately above clypeal suture smooth and shiny- not punctate. Frons usually with strong ledge between antennae. Gena wide (Fig. 33), genal carina at top of genal angle (Fig. 22). Thorax and abdomen predominately black, tergum II often with ivory diagonal markings or all black. Female armature various, usually present. Wings darkened or smoky .....*Trigonalys*
- Area immediately above clypeal suture as punctate as frons immediately above antennae. Frons relatively flat. Metasoma dark with transverse light markings or entirely orange. Female armature on sternum II. Other characters variable .....3
3. Shortest distance between toruli (antennal sockets) about the same as the shortest distance between the inner eye margin and the torulus. Marginal cell and area distal of marginal cell much darker than discal cell. Female with bluntly bifid armature on sternum II, armature on sternum III forms a flat ledge under sternum II and does not project. Male with flattened sterna and with 5 or more narrow elongate tyloids on outside of antennae .....*Taeniogonalos*
- Shortest distance between toruli is almost twice the shortest distance between the inner eye margin and the torulus. Wing hyaline or evenly colored, marginal cell

not darker than rest of wing. Metasoma orange except darker near petiole. Female armature with two parallel sharp 'fins' on sternum II, armature on sternum III forms a flat projecting ledge under sternum II. Male unknown, possibly without tyloids

.....Afrigonalys

### Key to Eurasian and Indo-Australian Genera<sup>1</sup>

1. Vertex cleft at midline. Antennae with 13-15 segments .....2
  - Vertex normal. Antennae with 17-32 segments .....3
2. Maxillary palps rudimentary .....Pseudonomadina
  - Maxillary palps about as long as mandibles and distinctly segmented ....Bakeronymus
3. Males (with parameres which appear as paired paddle-shaped appendages sometimes projecting ventrally from abdomen and not to be confused with cerci(?), which are dorsal, short and rounded; tyloids may be present on antennal segments 10 through 13-18; never with medial projection at or near apex of sternum II or III, though sternum II sometimes with a projection on the anterior half before a flattened area in Taeniogonalos, or with two small pre-apical lateral spines in Lycogaster) .....4
  - Females (often with armature, never with tyloids on several flagellomeres, but flagellomeres always with, though not always visible, a circular area of white spots in same location as tyloids are on male) .....11
4. Tyloids absent .....5
  - Tyloids present .....7

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<sup>1</sup>Europe has only one species, *Pseudogonalos hahnii*. The key excludes Tsuneki's genera *Taiwanogonalos*, *Jezonogonalos*, and the males of *Teranishia*.

5. Terga opaque where they overlap sterna laterally, not folding over sterna ventrally.  
 Sternum II with two small pre-apical spines, just lateral of midline. Vertex rounded .....*Lycogaster*
- Terga with wide translucent to transparent lateral margins that reach ventrally and overlap sterna. Sternum II without ventral spines. Vertex flat and rectangular .....6
6. Stout bodied, Vespine-like. Thorax strongly areolate. Antennae not banded, sometimes thickened, with 18-23 segments .....*Bareogonalos*
- Body slender and elongate, ichneumonid-like. Thorax sparsely punctate. Antennae filiform, often banded, with 22-32 segments. Metasoma thin, and generally tubular .....*Orthogonalys*
7. Tyloids linear .....*Taeniogonalos*
- Tyloids not linear but broadened or rounded .....8
8. Tyloids almost round, globular shape .....9
- Tyloids oval-elongate. Gray color, with dull luster .....10
9. Genal carina ending at lateral edge of mandibular base. Frons forms a horizontal 'shelf' between antennae, the line from the median ocellus to the clypeus strongly angled in side view. No large vertical lobes over scape .....*Trigonalys*
- Genal carina ending at hypostomal carina. Frons medially flat, with large vertical lobes covering the scape .....*Pseudogonalos*
10. Tyloids with broad flat top surface, with dull velvet like luster .....Genus 2  
 (Two undescribed species from New Guinea)
- Tyloids keel shaped, top surface not flat, with dull lead-like luster. Australia .....*Mimelogonalos*
11. Distinct armature present on second or third metasomal sternum .....12

- Armature not present .....16
- 12. Armature only on sternum III .....13
  - Armature on sternum II, if also on sternum III, smaller and covered by armature on sternum II .....14
- 13. Gena smooth, shining. Frons strongly angled in side view .....Trigonalys
  - Gena punctate. Frons relatively flat .....Taeniogonalos flavocincta
- 14. Top of head rectangular, flattened. Sternum III with small posteriomedial projection often under sternum II. Propodeum strongly areolate, metasoma generally smooth and usually shining .....Bareogonalos
  - Top of head rounded, not flattened. Sternum III may form a ledge but does not project posteriorly. Propodeum not strongly areolate, metasoma various, often punctate and dull .....15
- 15. Armature consisting of flat vertical ledge at apex of sternum II with two small indistinct lateral spines slightly more raised than the center ledge. The anterior part of sternum III forms a wide but not very tall ledge under sternum II. Antennae spindleform .....Lycogaster
  - Armature various but not as above. Antennae filiform .....Taeniogonalos (in part)
- 16. Supra-antennal elevation reduced, intertorulus area is relatively flattened, without projecting lobes. Toruli (bases of antennae) as far apart as length of first flagellomere. Propodeal foramen usually 'V' shaped, taller than wide, with a weak, thin carina around it. Sternum II swollen ventrally and may have slight medial elevation in front of posterior edge. Terminal sternum pointing anteriorly toward sternum II or straight down; tip sclerotized, forming short hypodermic needle-like structure .....Taeniogonalos (in part)



- Supra-antennal elevation prominent, often forming distinct lobe. Intertorulus distance variable, often close together. Propodeal foramen usually 'U' shaped, generally wider than tall and usually bordered with a thick carina. Sternum II not swollen ventrally and without medial elevation. Terminal sternum in undistorted specimens pointing down or posteriorly, usually not more sclerotized at tip than rest of sternum .....17
- 17. Genal carina ending at lateral edge of mandibular base. Terminal sternum modified into cylindrical tube generally pointing straight down ventrally. Mesosoma and metasoma compact, not elongate. Australia .....Mimelogonalos
- Genal carina ending at hypostomal carina. Terminal sternum not cylindrical, generally pointing straight back posteriorly. Body elongate. Not known from Australia .....18
- 18. Propodeal carina 'U' shaped, foramen 'V' shaped .....19
- Propodeal carina and foramen both 'U' shaped .....20
- 19. Frons with large shiny vertical lobes mesad of the scape that are generally all black .....Pseudogonalos
- Frons with punctate lobes, not shiny, and generally with light markings ....Teranishia
- 20. Dorsellum pyramidal. Petiole strongly constricted and distinctly different from second metasomal segment. Tergum II much longer than tergum III. Wings hyaline, infusate, or fasciate .....Genus 2 (New Guinea)
- Dorsellum flat. Petiole not constricted, sternum I similar to sternum II. Tergum II slightly longer than tergum III in undistorted specimens. Wings hyaline .....Orthogonalys