

ON THE IMMATURE STAGES OF NORTH AMERICAN PYROCHROIDAE

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If an entomologist in the Eastern United States should lift the loosened bark from a fallen log, the chances are very good that he would find a long, flat, pale yellow larva, having a forceps-like tail. The chances are also very good that this larva would be a pyrochroid, not a cucujid as believed by many collectors. Perhaps such larvae are usually thought to be cucujid because their flat shape is similar to that of the adult *Cucujus clavipes*. Pyrochroid adults are certainly not flat. One characteristic, easily seen in the field with the aid of a low-powered hand lens, will serve to separate the Pyrochroidae from all other flattened larvae with forceps-like tails: the pyrochroids have the ninth sternite with closely set, small spines on the anterior and lateral borders (fig. 1). The ninth sternite is that plate lying just anterior to the anus. Flat larvae in other families may have teeth on the ninth sternite but they are not like those on the pyrochroids.

The larvae of the family Pyrochroidae may be characterized as follows. This description is slightly modified from Peterson's *Larvae of Insects*, Part 2, 1951, p. 67. Full-grown larvae measure 20 to 35 mm. Head and body segments depressed, orthosomatic, firmly sclerotized, smooth, shiny, and lightly pigmented. A few conspicuous setae may be present on most segments. Head exserted, depressed, subequal in width to prothorax, possessing a lyre-shaped epicranial suture which surrounds a fused frons and clypeus. Labrum is a distinct lobe. Three-segmented antennae are conspicuous, slender, and usually subequal in length to head; with a distinct papilla in membrane between segments 2 and 3. Ocelli present, usually 4 or 5 on each side. Mandibles strong, asymmetrical, sclerotized, usually tridentate at the curved apex; distinct molar areas, especially on left mandible. Each maxilla consists of a bipartite cardo, three-segmented palpus, and a combined stipes and setiferous mala with a distinct spine (uncus) at distomesal corner. Labium with a well-defined submentum, mentum, a slightly elongate ligula, and a pair of two-segmented palpi. Prothorax somewhat longer than the subequal mesothorax or metathorax and about same width as that of head. Three pairs of legs subequal in size and structure, each consisting of 4 segments and a terminal claw-like tarsungulus. Abdomen from dorsal view has 9 segments. Eighth segment is usually twice as long as ninth without urogomphi included. Ninth segment consists largely of 2 large, posteriorly projecting, deeply pigmented, roughened urogomphi, with 2 usually distinct pits on margin between their proximal portions. On venter of ninth segment a continuous arch of small spines (asperities) occurs cephalad of the anus. Spiracles annular or oval; they are located on lateral aspects of mesothorax and abdominal segments

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1 to 7; on eighth segment they are on ventrolateral portion of tergite. Commonly found under the bark of dead deciduous or coniferous trees.

Four genera of Pyrochroidae are known from America, north of Mexico. We have never seen the immature stages of *Ischalia*, a genus which is tentatively included in this family in the Leng Catalogue. The other three genera and as many species as are known to us may be differentiated as follows:

KEY TO THE LARVAE OF PYROCHROIDAE OF AMERICA, NORTH OF MEXICO

1. Urogomphi short and stout, straight or slightly curved, each with obviously coarse projections on inner face (fig. 2); abdominal segment 8 having oval spiracle located approximately equidistant from lateral line and tergo-sternal suture -----
----- NEOPYROCHROA FLABELLATA (F.)
Urogomphi often long and obviously curved, smooth or granulate on inner face (if urogomphi not obviously curved, then the inner face is smooth or granulate); abdominal segment 8 having circular spiracle adjacent to the lateral line ----- 2
2. Abdominal segment 8 shorter, one and one-half times as long as segment 7; urogomphi and dorsum of segment 9 between bases of urogomphi without granules, or if present not more deeply pigmented than the surrounding integument (fig. 3) -----
----- SCHIZOTUS CERVICALIS Newman
Abdominal segment 8 twice or nearly twice as long as segment 7; urogomphi with granules that are obviously darker than the surrounding integument ----- 3
3. Urogomphi nearly straight, short, the length of each, measured from base of curve between them, less than the distance between them at apices (fig. 4) -----
----- DENDROIDES CONCOLOR (Newman)
Urogomphi curved, elongate, the length of each, measured from base of curve between them, greater than the distance between them at apices ----- 4
4. Abdominal segment 8 near anterior margin with distinct complete transverse ridge; urogomphi with many tubercles (fig. 5) -----
----- DENDROIDES EPHEMEROIDES (Mannerheim) and PICIPES Horn
Abdominal segment 8 with scarcely discernible ridge, the latter broadly interrupted at midline of tergite; urogomphi with few, indistinct granules -----
----- DENDROIDES CANADENSIS Latreille

The pupae of beetles are very poorly known. Many of our most common species are unknown in the pupal stage. This is unfortunate, for the pupal stage could provide valuable characteristics in showing us the relationships of taxa. Experienced coleopterists can identify some pupae even to species because they recognize in the pupae the habitus of the adults. We were able to identify male pupae of *Neopyrochroa* to species because of the distinctively sculptured heads. In addition, if the beetle is in the later part of the pupal stage, one can actually see and identify the ensuing adult stage through the pupal skin. When these methods are not possible, we must rely on structures which are unique to the pupal stage. Such structures are the projections on the middle abdominal segments and pronotum. These projections are usually either in the form of tubercles or broad lobes.

A very brief description of the pupae of the Pyrochroidae follows. Head and dorsum of body with elongate, subcylindrical tubercles, their length quite obviously greater than their width. Each tubercle with a long, slender seta, which may be apically or subapically placed. Tubercles arranged as follows. Pronotum with 3 or 4 on each of the anterior and posterior

angles, with 2 pairs on posterior border. Middle segments of abdomen with tergite having 2 or 4 pairs on posterior border near midline, 1 bifurcate or 2 simple ones at posterolateral angle, and one on lateral border; 1 on pleural area below the spiracle, and 2 on each posterolateral corner of sternite, the inner of which is longer.

KEY TO THE KNOWN PUPAE OF PYROCHROIDAE OF AMERICA, NORTH OF MEXICO

1. Tergites of abdominal segments 2 to 6 with one large, apically bifurcate tubercle on the posterolateral angle, and with all tubercles on these tergites having setae arising subapically (fig. 6) ----- **NEOPYROCHROA** Blair
- Tergites of abdominal segments 2 to 6 with two slender, apically simple tubercles on posterolateral angle, and with all tubercles on these tergites having setae arising apically (fig. 7) ----- 2
2. Metafemur having 7 or more setae visible when viewed ventrally ----- **SCHIZOTUS** Newman
- Metafemur having 5 or rarely 6 setae visible when viewed ventrally - **DENDROIDES** Latreille

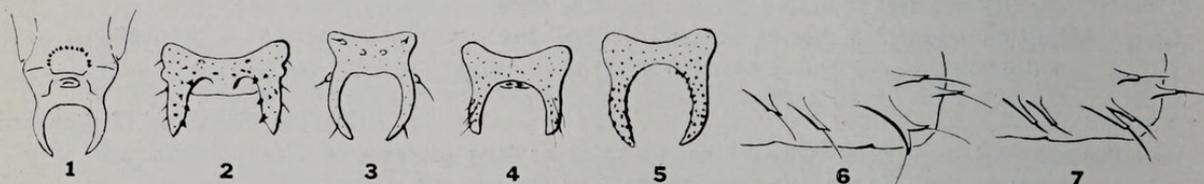


FIGURE 1, ventral view of apex of abdomen of a pyrochroid larva, showing small spines on plate just anterior to anus. FIGS. 2-5, dorsal views of urogomphi of larvae. FIG. 2, *Neopyrochroa flabellata*; FIG. 3, *Schizotus cervicalis*; FIG. 4, *Dendroides concolor*; FIG. 5, *Dendroides ephemeroides*; FIGS. 6-7, Dorsal views of posterolateral quarter of third abdominal tergite of pupae. FIG. 6, *Neopyrochroa flabellata*; FIG. 7, *Dendroides concolor*.



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