

## A NEW SPECIES OF *PARACLOEODES* (EPHEMEROPTERA: BAETIDAE) FROM MEXICO<sup>1</sup>

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ABSTRACT: *Paracloeodes lugoii*, n. sp., is described from Morelos, Mexico. Structure of the labrum, mandibles, and labial palps distinguishes the larval stage of *P. lugoii* from all other known species of *Paracloeodes*. The adult stage of the new species is unknown.

Previously only one species of *Paracloeodes* (Ephemeroptera: Baetidae), *P. minutus* (Daggy), was known from North America, including the U.S. (see Daggy 1945, Day 1955, McCafferty and Waltz 1990) and Mexico (Lugo-Ortiz and McCafferty 1994). Six additional species are known from Middle and South America, including one species each from Cuba (Kluge 1991) and Puerto Rico (Traver 1938), and four species from South America (Lugo-Ortiz and McCafferty 1996). *Paracloeodes minutus* is also known from Costa Rica (McCafferty and Lugo-Ortiz 1996). Herein we describe a distinctive new North American species of *Paracloeodes* from Morelos, Mexico. Material of the new species is deposited in the Purdue Entomological Research Collection, West Lafayette, Indiana.

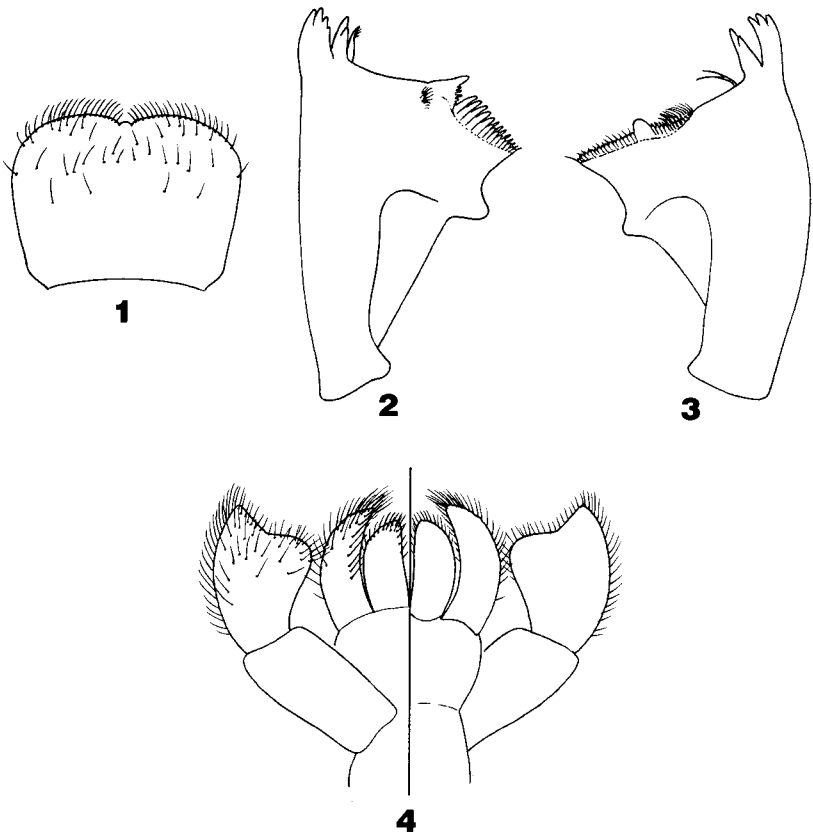
### *Paracloeodes lugoii* Randolph and McCafferty, NEW SPECIES

**Larva.** Body length: 5.5 mm. Caudal filaments length: 2.0 mm. Head: Coloration light brown with no discernable pattern; frontal keel present between antennae. Antennae approximately 1.5x length of head capsule. Labrum (Fig. 1) rounded anteriorly, with margin of medial notch convex, with lateral margins converging posteriorly, and with long, simple setae scattered dorsally; anterior margin with row of long, fine simple setae. Left mandible (Fig. 2) with incisors fused at midlength; outer set of incisors with four denticles, inner set of incisors with two denticles; prosthema stout; small tuft of setae at base of triangular process of mola; molar triangular process obliquely directed medially, with four denticles medially. Right mandible (Fig. 3) with incisors cleft to base; outer set of incisors with three denticles, inner set of incisors with two denticles; prosthema bifid; tuft of setae present at base of mola; mola with one long, simple seta protruding from medial margin. Maxillae [similar to Fig. 17, Lugo-Ortiz and McCafferty (1996)] with three denticles at apex of galealaciniae; palps two segmented, with simple setae scattered over surface, more concentrated near apex; segment 2 slightly longer than basal segment. Labium (Fig. 4) with glossae and paraglossae with long, fine simple setae concentrated at apices; glossae with numerous fine, simple setae scattered over surface and with row of stout setae medially; paraglossae with long, fine simple setae on outer margin and single row of long, fine simple setae medially; distal palp segment subtriangular, reduced in size, with long, fine simple setae scattered over surface, more concentrated near apex; junction of medial projection of segment 2 and apex of palp forming distinct obtuse angle medially; segment 2 with medial margin nearly straight and evenly tapering basally, broadly joined to segment 1, with long, fine simple setae scattered over surface of segment 2; palp segment 1 subequal in size to

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remainder of palp. Thorax: Prothorax with pair of submedian bilobed markings; meso- and metathorax brown with no discernable pattern. Forelegs with row of stout setae dorsally, and row of small, spatulate setae just below row of stout setae, ventrally with scattered long, stout, simple setae and long, fine, simple setae; femora with cluster of long, fine, simple setae and two stout setae distally; tibiae and tarsi with long, fine, simple setae scattered on dorsal surface and long stout setae ventrally; tarsi with few very fine setae ventrally; tarsal claws with barely discernable row of minute denticles basally. Hindwingpads absent. Abdomen: Terga brown with darker brown patterning throughout; terga 1-2 brown; terga 3-6 brown with pair of submedian darker brown spots near posterior margin and with anteromedial darker brown spot on each tergum; tergum 6 with anterolateral corners light brown; terga 7-9 lighter brown with anteromedial dark spot and paired submedian posteriorly directed dark markings; tergum 9 bordered laterally and posteriorly with dark pigment; tergum 10 mostly light brown, with anteromedial dark spot; posterior tergal spines approximately 1.5x longer than basal width.



Figs. 1-4. *Paracloeodes lugoi*, n. sp., larva. 1. Labrum (dorsal). 2. Left Mandible. 3. Right Mandible. 4. Labium (left-ventral; right-dorsal).

Paraprocts with twenty marginal spines, with medial spines largest; triangular process with 14 uniform spines; body of paraproct with long, simple setae scattered over surface. Gills on segments 1-7, asymmetrical, with outer margin straight; gill margins weakly serrate, with long, fine, simple setae at each serration; gill trachea distinct. Sterna uniformly brown, with long, fine, simple setae scattered over surface. Caudal filaments uniformly brown with numerous long, fine, simple setae medially, terminal filament subequal to cerci and with numerous, long, fine, simple setae laterally.

**Adult.** Unknown.

**Material examined.** Holotype: Larva, MEXICO, Morelos State, Río Cuautla at Cuautla, elev. 4600', temp. 70° F, XI-13-1968, R. K. Allen, [mouthparts, legs, tergum 3-4, gills 3-4, paraprocts mounted on slide (medium: Euparal)].

**Etymology.** We are honored to name this species after C. R. Lugo-Ortiz for his recent and prolific contributions to global baetid taxonomy.

**Diagnosis.** Larvae of *Paracloeodes lugoi* differ from all South American forms (see Lugo-Ortiz and McCafferty 1996) by the absence of hindwingpads and presence of a uniquely shaped labial palp (Fig. 4). *Paracloeodes lugoi* larvae are most similar to the North and Central American species *P. minutus* but can be separated from that species on the basis of the distinctive shape of the labial palps (Fig. 4), the convex shape of the labrum (Fig. 1), and the bifid prostheca on the right mandible (Fig. 3). The medial projection of labial palp segment 2 in *P. lugoi* is larger in relation to the apex of the palp (Fig. 4) than that of *P. minutus* [Fig. 12, Day (1955)]. The angle formed by this projection and the apex in *P. lugoi* is considerably greater than the approximate right angle found in *P. minutus*. The base of labial palp segment 2 in *P. lugoi* is relatively broad, evenly broadening distally. In *P. minutus*, the base of segment 2 is narrower and the medial margin is concave [Fig. 12, Day (1955)]. The labrum of *P. lugoi* (Fig. 1) is considerably more convex anteriorly than the labra of specimens of *P. minutus* we have examined. The prostheca of the right mandible (Fig. 3) of *P. lugoi* is apically bifid, whereas that of *P. minutus* is serrate medially. In addition, the molar triangular process of the left mandible in *P. lugoi* (Fig. 2) is obliquely directed, rather than being perpendicularly prominent as in *P. minutus*.

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