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(Ephemeroptera: Tricorythidae)

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A New Species of *Tricorythodes* with Notes (Ephemeroptera: Tricorythidae)¹

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ABSTRACT

Description and figure are presented for *Tricorythodes curvatus* Allen, n. sp., and the nymphs of the North and Central American *Tricorythodes* are placed in two species groups, the *albilineatus*-group and the *curvatus*-group.

A collection of nymphal mayflies on loan from the Academy of Natural Sciences of Philadelphia includes an undescribed species of *Tricorythodes*, *T. curvatus* n. sp., which is closely related to *T. corpulentus* Kilgore & Allen, *T. dimorphus* Allen, and *T. edmundsi* Allen. The nymphs of *Tricorythodes* typically possess triangular-shaped operculate gills that are angulate mesally (Fig. 1), whereas the above mentioned species have subovate operculate gills that are rounded mesally (Figs. 2-5).

The shape of the operculate gills is of taxonomic importance and two groups of related species are recognized for the nymphs of the North and Central American *Tricorythodes*, the *albilineatus*-group and the *curvatus*-group. The *albilineatus*-group is composed of *T. albilineatus* Berner, *T. minutus* Traver (= *fallax* Traver), *T. notatus* Allen & Brusca, *T. sordidus* Allen, and *T. ulmeri* Allen & Brusca. The *curvatus*-group includes *T. corpulentus*, *T. curvatus*, *T. dimorphus*, and *T. edmundsi*. The nymphs of *T. allectus* (Needham), *T. atratus* McDunnough, *T. explicatus* (Eaton), *T. fictus* Traver, *T. peridius* Traver, *T. stygiatus* McDunnough, and *T. texanus* Traver are undescribed and unassignable to species-group at this time.

albilineatus-group

Characters that would serve to distinguish the nymphs of the five species now included in the *albilineatus*-group have not been established at this time. Nymphs assignable to this species-group are distributed from Central America to northern British Columbia (53°34' N. latitude) in western North America and Newfoundland (47°34' N. latitude) in eastern North America.

curvatus-group

The five species included in this species-group have a restricted latitudinal range and are known only from northern Mexico (ca. 23°43'

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N. latitude) to northern Utah in the western United States (ca. 40°45' N. latitude) and to northern Arkansas in the central United States (ca. 36°10' N. latitude).

The following key will serve to distinguish the nymphs of the *curvatus*-group.

KEY TO THE SPECIES

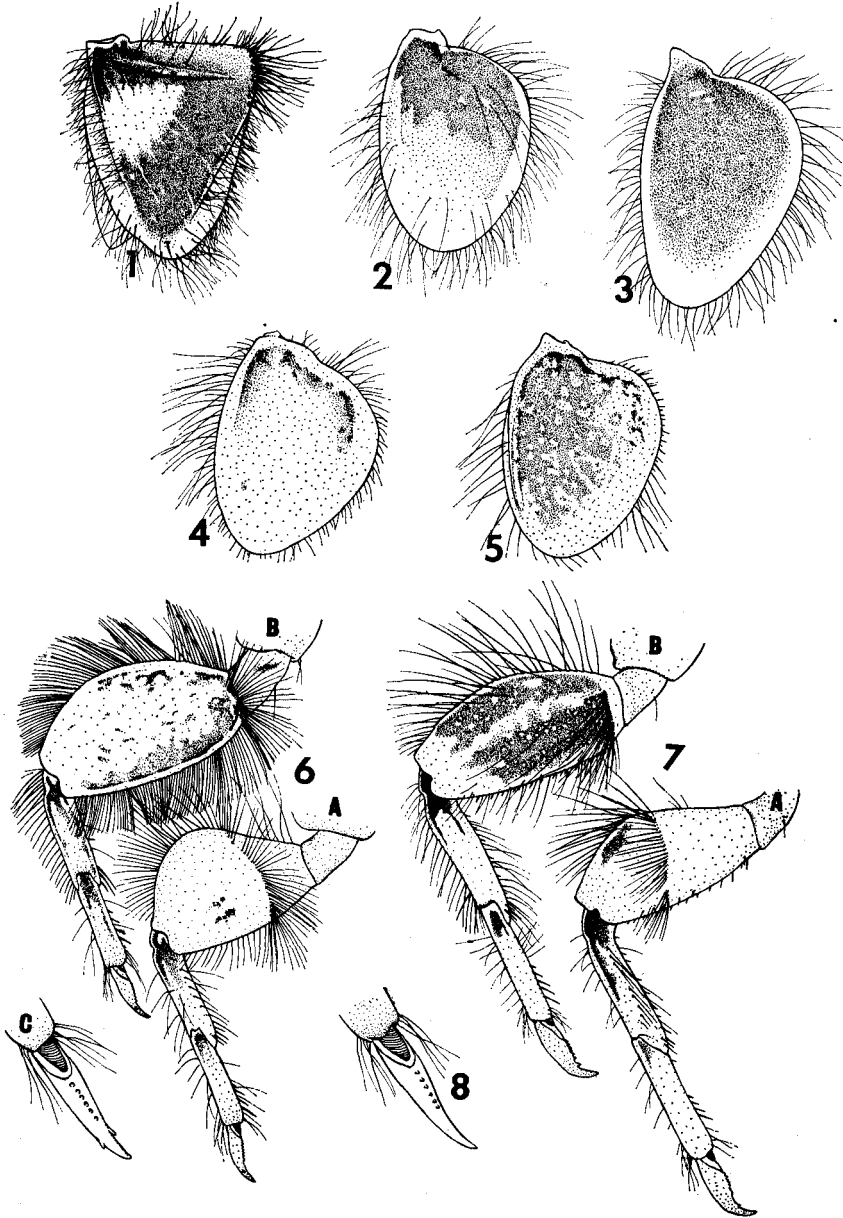
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|-------|---|--------------------|
| 1. | Maxillary palpi 1-segmented; femora with sparse irregularly spaced long and short marginal setae (Fig. 7a,b) | 2 |
| | Maxillary palpi absent; femora with numerous regularly spaced long marginal setae (Fig. 6a,b) | 3 |
| 2(1). | Tarsal claws with marginal denticles and single subapical denticle near apex; operculate gills with black apical macula (Fig. 2); sexes dimorphic, males with large compound eyes | <i>dimorphus</i> |
| | Tarsal claws with marginal denticles, without subapical denticle near apex; operculate gills suffused with black (Fig. 3); sexes not dimorphic, males with small compound eyes | <i>curvatus</i> |
| 3(1). | Tarsal claws with marginal denticles and paired subapical denticles (Fig. 6c); operculate gills suffused with black (Fig. 5); body 5.0–6.0 mm in length | <i>corpulentus</i> |
| | Tarsal claws with marginal denticles, without paired subapical denticles (Fig. 8); operculate gills with apical U-shaped macula (Fig. 4); body 3.0–4.0 mm in length | <i>edmundsi</i> |

Tricorythodes curvatus n. sp.

Nymph. Length: body 5.0–6.0 mm; caudal filaments 4.0–5.0 mm. General color brown with dark markings. Head dark with pale markings; large pale macula below median ocellus, pale around compound eyes; maxillary palpi 1-segmented, without apical seta. Thoracic nota pale with irregular black markings; thoracic nota with moderately long setae; legs yellow with proximal tibial macula; femora marginal setae long and short, sparse, and irregularly spaced as in Fig. 7a,b; twice as long as broad; hind femora 40% longer than fore femora; tarsal claws with 6–8 small marginal denticles, without sub-marginal denticles. Abdominal terga yellow with wide dark transverse band; terga with

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FIGS. 1–8. Nymphal structures of *Tricorythodes*. 1, *T. minutus*, operculate gill; 2, *T. dimorphus*, operculate gill; 3, *T. curvatus*, operculate gill; 4, *T. edmundsi*, operculate gill; 5, *T. corpulentus*, operculate gill; 6, *T. corpulentus*, a, fore leg, b, hind leg, c, tarsal claw; 7, *T. dimorphus*, a, fore leg, b, hind leg; 8, *T. edmundsi*, tarsal claw.



long setae; posterolateral projections poorly developed on segments 7-9; operculate gill subovate, rounded mesally (Fig. 3), suffused with black; abdominal sterna pale. Caudal filaments pale.

Types. Holotype: mature nymph, White River, ca. 2.8 mi. ENE Salada, Independence Co., Arkansas, 30-31-VII-74, J. W. Richardson, in collection Academy of Natural Sciences of Philadelphia. Paratopotypes: 2 nymphs, same data as holotype, one each in collection Academy of Natural Sciences of Philadelphia and California State University, Los Angeles.

Tricorythodes corpulentus Kilgore & Allen

Tricorythodes corpulentus Kilgore & Allen 1973: 330.

This species was described from a single nymph collected in Catron Co., New Mexico.

Nymph. Length: body 4.5-5.5 mm; caudal filaments 5.0-6.0 mm. General color pale with dark brown and black markings. Head pale to light brown; occiput with dark brown markings; head with long setae; maxillary palpi absent. Thoracic nota yellow with dark brown markings; thoracic nota with moderately long setae; legs yellow with diffuse black markings; fore femora with 2 small maculae; femoral marginal setae long, numerous, and regularly spaced (Fig. 6a,b); fore femora as long as broad; hind femora 35% longer than fore femora; tarsal claws with 5-6 basal marginal denticles and 2 submarginal denticles near apex (Fig. 6c). Abdominal terga yellow with broad dark brown transverse band; terga with long setae; posterolateral projections poorly developed on segments 7-9; operculate gills rounded mesally, with diffuse black markings (Fig. 5). Caudal filaments pale.

Tricorythodes dimorphus Allen

Tricorythodes ? Edmunds, Allen & Peters 1963: 71.

Tricorythodes dimorphus Allen 1967: 372; Kilgore & Allen 1973: 330.

This species was described from a small series of nymphs collected in Arizona and New Mexico, and in 1973, Kilgore & Allen reared and described the male imago from southern California.

Male Nymph. Length: body 2.5-4.5 mm; caudal filaments 2.0-3.5 mm. General color yellow to light brown with black markings. Head yellow to light brown; compound eyes large; maxillary palpi 1-segmented, with apical seta. Thoracic nota yellow to light brown with irregular black markings; legs yellow with black markings; femora with variable black markings; tibiae and tarsi with apical black maculae; femora marginal setae long and short, sparse, and irregularly spaced (Fig. 7a,b); fore femora twice as long as broad; hind femora 35% longer than fore femora; tarsal claws with 6-8 marginal denticles, and single submarginal denticle near apex. Abdominal terga black

with variable yellow to light brown markings; terga with long setae; posterolateral projections poorly developed on segments 7-9; operculate gills rounded mesally, with black apical marking (Fig. 2). Caudal filaments yellow.

Female Nymph. Length: body 4.0-6.5 mm; caudal filaments 3.0-4.0. General color brown. Compound eyes small. Other characters as in male except for usual sexual differences.

Tricorythodes edmundsi Allen

Tricorythodes edmundsi Allen 1967: 370.

The nymphs of this species were described from a small series collected in Utah and northern Mexico.

Nymph. Length: body 3.0-4.0 mm; caudal filaments 1.0-2.0 mm. General color brown with black markings. Head brown; head with long setae; maxillary palpi absent. Thoracic nota brown with variable markings; nota margined with long setae; legs yellow; middle and hind femora with variable markings; tibiae and tarsi with apical black maculae; femoral marginal setae long, numerous, and regularly spaced as in figure 6a,b; fore femora less than twice as long as broad; hind femora 40% longer than fore femora; tarsal claws with 5-7 marginal denticles (Fig. 8). Abdominal terga brown to yellow with dark transverse bands; posterolateral projections poorly developed on segments 7-9; operculate gills rounded mesally, with black U-shaped marking (Fig. 4). Caudal filaments pale.

LITERATURE CITED

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