

New records of Ephemeroptera from Middle America

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ABSTRACT. New country and regional records and notes for 14 species of Ephemeroptera are reported for Middle America, based on materials from Belize, Costa Rica, El Salvador, Guatemala, and tropical Mexico. Of these species, *Baetis quilleri* Dodds (previously North America), *Borinquena* (*Australphlebia*) spp., *Farrodes* sp., *Lachlania abnormis* Hagen and *Terpides jessiae* Peters and Harrison (previously West Indies), and *Leptohyphes nigropunctatum* Traver and *L. peterseni* Ulmer (previously South America) are newly reported from Middle America.

The Ephemeroptera of Middle America remains poorly known (Edmunds et al., 1976) but of special importance for understanding the systematics and zoogeography of this order in the Western Hemisphere. I recently studied collections of larval and adult mayflies from Belize, Costa Rica, El Salvador, Guatemala, and southern Mexico, and discovered new distributional records associated with certain of the presently nominal species or genera represented, some involving significant and perhaps unexpected range extensions. These records and pertinent notes are itemized below with the intent of further elucidating Middle American mayfly faunistics and latitudinal ranges.

Baetis quilleri Dodds. This species has been known previously from the western United States only, although Morihara and McCafferty (1979) predicted that its range eventually would be found to extend into Central America. *New Records:* BELIZE, Sabun River, Gracy, 19.vi.1974, V.Resh. COSTA RICA, Guanacaste Prov., Rio

Tenorio at Finca La Pacifica, 8.ii.1969, W.P.McCafferty. These records are based on larval specimens. Kimmins (1934) described *Baetis eatoni* on the basis of adults from N.Sonora, Mexico, and noted that the name may be a synonym of *B. quilleri*. I would agree that this synonymy is likely.

Baetodes caritus Cohen and Allen. This species was described from El Salvador, Guatemala, Honduras, and Mexico (Cohen and Allen, 1972). It evidently is widespread in Middle America and my discovery of several larvae in Costa Rica is not unexpected. *New Records:* COSTA RICA, Guanacaste Prov., Rio Tenorio at Finca La Pacifica, 2.ii.1969, W.P. McCafferty; Puntarenas Prov., Peninsula de Osa, Quebrada Aquabuena, 8.iii.1969, W.P. McCafferty.

Baetodes tritus Cohen and Allen. This species has been known previously from Mexico (Cohen and Allen, 1972) and Panama (Cohen and Allen, 1978). It, like many species of *Baetodes*, is apparently widespread in Middle America. *New Record:* BELIZE, Mopan Branch-Melchor, 27.vi.1974, V. Resh. The larvae of this species, upon which the new record is based, show some variations in color

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from that described by Cohen and Allen (1972).

Lachlania abnormis Hagen. This species is the genotype and has been known previously from Cuba only. Several adults from Central America agree in detail with the description of *L. abnormis* (Eaton, 1883). *New Record*: EL SALVADOR, Puerto La Libertad, 1.vii.1966, A. Ortiz. Allen and Cohen (1977) described *Lachlania iops* from Chiapas, Mexico, on the basis of larvae only. This name could be synonymous with either *L. abnormis* or *L. fusca* (Navas), both of which are older names based on adults and presently undescribed as larvae.

Epeorus metlacensis Traver. This distinctive species is known from larvae and adults taken previously in Mexico and Costa Rica (Traver, 1964). I have examined additional adults as follows. *New Record*: GUATEMALA, Puerto Barrios, 10.vi.1966, A. Ortiz. *Epeorus packeri* is known from Honduras, but is described as larvae only (Allen and Cohen, 1977).

Borinquena (Australphlebia) spp. What appear to be two undescribed species of this genus and subgenus (a taxon reported previously only from the West Indies) were collected as larvae from Central America as follows. *New Record*: COSTA RICA, Puntarenus Prov., Peninsula de Osa, Quebrada Aquabuena, 8.iii.1969, W.P. McCafferty; Puntarenus Prov., 10 km north of San Vita at Quarry Waterfall, 16.iii.1969, W.P. McCafferty. The subgenus *Australphlebia* was established by Peters (1971) for *B. traverae* Peters, described from Dominica.

Farrodes sp. Both adults and larvae of this genus were discovered in Central America; however, Peters (pers. comm.) has found (unpublished) this taxon relatively common from Mexico to Argentina. Peters (1971) originally described the genus from the West Indies (Jamaica, Grenada, and Cuba). I have examined adults from Belize and larvae from Costa Rica as follows. *New Records*: BELIZE, Sabun River, Glenwood Farm, 30.vi.1974, V. Resh. COSTA RICA, Heredia Prov., Quebrada Salto at La Selva, 25.ii.1969, W.P. McCafferty; Puntarenus Prov., 10 km north of San Vita at Quarry Waterfall, 16.iii.1969., W.P. McCafferty. This and some other genera of Leptophlebiidae may be easily misidentified

as *Hermanellopsis* or a cognate in Edmunds et al. (1976) (Peters, pers. comm.).

Terpides jessiae Peters and Harrison. This species has been known previously only from St. Vincent, West Indies. I have larvae from Costa Rica that agree in exact detail with the description of this species given by Peters and Harrison (1974). *New Record*: COSTA RICA, Puntarenus Prov., Peninsula de Osa, Rio Rincon at end of Playa Blanco Road, 3.iii.1969, W.P. McCafferty. A second nominal species of *Terpides*, *T. guyanensis* Demoulin, is known from northern South America, where other leptophlebiid genera that are apparently closely aligned with *Terpides* also occur (Peters and Harrison, 1974). I have seen at least one other undescribed species from Central America. Harry Savage is completing an exhaustive study of *Terpides* that will redefine species concepts. Peters (pers. comm.) has indicated that species distributions of Leptophlebiidae, at least, are not generally expected to include Central America and the Lesser Antilles.

Thraulodes packeri Traver and Edmunds. This species has been reported from Honduras by Traver and Edmunds (1967) and from Honduras and Mexico by Allen and Brusca (1978). I have larvae and adults as follows. *New Records*: BELIZE, Sabun River, Gracy, 19.vi.1974, V. Resh; Rio Provacion, 21.vi.1974, V. Resh.

Thraulodes zonalis Traver and Edmunds. This species was described from Panama (Canal Zone) by Traver and Edmunds (1967) and later reported from Costa Rica by Allen and Brusca (1978). I have a large series of larvae as follows. *New Record*: BELIZE, Rio On, 21.vi.1974, V. Resh.

Campsurus cuspidatus Eaton. This species was originally described from Guatemala (Eaton, 1871), and Traver (1960) tentatively identified adults from San Luis Potosi, Mexico, as *C. cuspidatus*. I have adults from Mexico that would substantiate Traver's tentative records as follows. *New Record*: MEXICO, Vera Cruz, Santiago Tuxtla, 25.vii.1966, A. Ortiz.

Leptohiphes nigropunctatum Traver. This species was described from adults from Venezuela (Traver, 1943), and has not been reported since that time. Traver (1958) diagnosed adults of *Leptohiphes* species occurring north of the Amazon River. Adults

from Middle America agree with her diagnosis of *L. nigropunctatum* and are reported as follows. *New Record*: MEXICO, Guerrero km 8 at Chilpancingo, 29.vii.1963, F. Pecheco. Nearly all known *Leptohyphes* from Middle America have been described as larvae (Allen and Brusca, 1973; Allen, 1978), and it is possible that the larvae of *L. nigropunctatum* have previously been identified from Middle America as another species (probably an eventual junior synonym).

Leptohyphes peterseni Ulmer. This species has been known previously only from Argentina, Bolivia, and Brazil (Ulmer, 1920). I have a large series of adults from Central America as follows. *New Records*: EL SALVADOR, Puerto La Libertad 1.vii.1966, A. Ortiz. GUATEMALA, Puerto Barrios, 27.vi.1966, A. Ortiz. Traver (1958) described *Leptohyphes sabinas* from Nueva Leon, Mexico, and Allen (1978) described the larvae of this species, also from Mexico. Traver (1958) stated that "perhaps *sabinas* might be considered the northern counterpart of *peterseni*." These Middle American records would further suggest the possibility of *L. sabinas* being a junior synonym of *L. peterseni*.

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