

## NEW CENTRAL AMERICAN AND MEXICAN RECORDS OF EPHEMEROPTERA SPECIES<sup>1, 2</sup>

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**ABSTRACT:** New records of 35 mayfly (Ephemeroptera) species are documented for Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama and 20 Mexican states. *Acerpenna intermedia* in Mexico and *Baetodes bibranchius* in Tamaulipas represent new country records for Mexico. The Western Hemisphere distribution of each of the species treated is summarized.

The composition of the mayfly (Ephemeroptera) fauna of Mexico and Central America has been historically neglected, but has received considerable attention recently (see, e.g., McCafferty and Waltz 1990; Flowers and Domínguez 1992; McCafferty *et al.* 1992; McCafferty and Lugo-Ortiz 1992, 1994, 1996ab; Lugo-Ortiz and McCafferty 1993, 1994ab, 1995abde, 1996abc; Lugo-Ortiz *et al.* 1994; Domínguez 1995). At this writing, records of 178 nominal species in 43 genera and 11 families have been published from the region, with the families Baetidae (esp. *Baetodes*, *Callibaetis*, and *Camelobaetidius*), Leptoxyphidae (esp. *Leptoxyphes* and *Tricorythodes*), and Leptophlebiidae (esp. *Thraulodes*) being the most prevalent (see McCafferty and Lugo-Ortiz 1996b).

We provide new Central American or Mexican state records for 35 species. All new records are given for species arranged in alphabetical order, first by family, then by genus and species. A full accounting of the mayflies of North and Central America, to which the present study will contribute, is kept current on the World Wide Web by Mayfly Central (see McCafferty 1996). Materials examined are housed in: Florida A & M University (FAMU), Tallahassee; the Instituto de Ecología, A. C. (IEAC), Veracruz, México; the Purdue Entomological Research Collection (PERC), West Lafayette, IN; and the Universidad Nacional Autónoma de México (UNAM), México, D. F.

### BAETIDAE

*Acentrella insignificans* (McDunnough) — MEXICO: CHIHUAHUA: Río Gavilán, Los Amarillos, VI-23-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Tomóchic at Tomóchic Rt 16, I-20-1987, B. C. Kondratieff, larvae (PERC); Río Casas Grandes, I-16-1987, B. C. Kondratieff, larvae (PERC); Río Piedras Verdes, Colonia Juárez, I-16-1987, larvae (PERC); Río Piedras Verdes, Colonia Pacheco, I-22-1987, B. C. Kondratieff, larva (PERC); Arroyo Fresas, 3 mi above Río Piedras Verdes, VI-22-1987, larvae (PERC). This species has a widespread distribution in western North America, extending as far north as British Columbia. In Mexico, it was previously reported from Sonora (Allen and Murvosh 1987a).

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*Acerpenna intermedia* Lugo-Ortiz and McCafferty — GUATEMALA: 10 mi NW of Tonicapán, mountain stream, 10,000 ft, V-7-1972, J. Vandermeer, larvae (PERC); Solalá: Ponajachel, 1550 m, VIII-21-1962, G. G. Musser, larvae (PERC). MEXICO: MEXICO: Nanchititla National Park, El Saltillo, VIII-23-1994, B. C. Kondratieff, larvae. This species was reported previously from Costa Rica only (Lugo-Ortiz and McCafferty 1994b).

*Acerpenna pletura* Lugo-Ortiz and McCafferty—MEXICO: NUEVO LEÓN. Río Ramos, XII-20-1939, L. Berner, larvae (PERC); PANAMA: Canal Zone: Río Pedro Miguel, George Green Park on Madden Road, IX-10-1963, W. L. Peters and C. M. Kennan, larvae (PERC). This species was previously reported from Belize, Costa Rica, Honduras, Nicaragua, and Tamaulipas in Mexico (Lugo Ortiz and McCafferty 1994b).

*Baetis caelestis* Allen and Murvosh—MEXICO: CHIHUAHUA: Río Tomóchic at Tomóchic Rt 16, I-20-1987, B. C. Kondratieff, larvae (PERC); small stream 12 mi W of Tomóchic, I-20-1987, B. C. Kondratieff, larvae (PERC); small stream S of Pacheco, I-22-1987, B. C. Kondratieff, larvae (PERC); Río Piedras Verdes, Colonia Pacheco, I-22-1987, B. C. Kondratieff, larvae (PERC). This species also occurs in the southwestern United States and the Baja California peninsula (Allen and Murvosh 1983).

*Baetis magnus* McCafferty and Waltz — MEXICO: MEXICO, D. F.: Desierto de los Leones, VIII-24-1994, B. C. Kondratieff, larvae (PERC); PUEBLA: 11 mi S of Chignahuapán, VII-26-1965, P. J. Spangler, larva (PERC); Nanchititla National Park, Río Los Barbechos, VIII-23-1994, B. C. Kondratieff, larvae (PERC); Zacatlán, Río San Pedro, VIII-18-1994, B. C. Kondratieff, larvae (PERC); Zacatlán, Río San Isidro, VIII-18-1994, B. C. Kondratieff, larvae (PERC); PANAMA: El Volcán, Palos Santos, 4300 ft, XI-13-1963, W. P. Murdoch, larvae (PERC); Chiriquí: Cerro Punta, 5300 ft, XI-13-1963, larvae (PERC); Cerro Punta, small stream, XII-28-1969, L. T. Nielsen, larvae (PERC). The range of this species includes southwestern United States, as far north as southwestern Nebraska; Mexico; and Central America (Lugo-Ortiz and McCafferty 1993).

*Baetis notos* Allen and Murvosh — MEXICO: MEXICO: San Diego Cuentalá, Hwy 134, VIII-22-1994, B. C. Kondratieff, larvae (PERC). This species is widespread in southwestern United States, and it was previously reported in Mexico from Veracruz only (Lugo-Ortiz and McCafferty 1994a).

*Baetis tricaudatus* Dods—MEXICO: MEXICO: Río at El Capulín, VIII 22-1994, B. C. Kondratieff, larvae (PERC); MEXICO, D. F.: Desierto de los Leones, VIII-24-1994, B. C. Kondratieff, larvae (PERC); VERACRUZ: Río La Perla, at La Perla, VIII-26-1994, B. C. Kondratieff, larvae (PERC). This species has a widespread distribution in the United States, and in Mexico it was previously reported only from Baja California Norte (Lugo-Ortiz and McCafferty 1994a).

*Baetodes bibranchius*, McCafferty and Provonsha—MEXICO: TAMAULIPAS: Río Guayalejo, XII-22-1939, L. Berner, larvae (PERC). This species was previously reported from south-central Texas only (McCafferty and Provonsha 1993).

*Baetodes fuscipes* Cohen and Allen — BELIZE: Cayo: Teakettle Village, I-22-1993, W. D. Shepard, larva (PERC). This species occurs from northeastern and eastern Mexico south to Honduras (Lugo-Ortiz and McCafferty 1995b).

*Baetodes inermis* Cohen and Allen — MEXICO: VERACRUZ: Río La Perla at La Perla, VIII-26-1994, B. C. Kondratieff, larvae (PERC). This species has a widespread distribution in Mexico (Cohen and Allen 1978).

*Callibaetis floridanus* Banks — EL SALVADOR: 15 mi W of La Unión, VII-31-1965, P. J. Spangler, larva (PERC); GUATEMALA: Chimaltenango, VIII-20-1965, P. J. Spangler, larvae (PERC); Chichicastenango, VIII-21-1965, P. J. Spangler, larvae; Estancia Virgen, Finca La Cajeta, VIII-12-1965, P. J. Spangler, larvae (PERC); HONDURAS: La Ceiba, light trap, V-22-1949, E. C. Becker, male adults (PERC); Choluteca: Nacaome bridge on Panamerican Hwy, Río Nacaome, X-10-1964, J. S. Packer, larva (PERC); MEXICO: AGUASCALIENTES: Aguascalientes, VIII-3-5-1963, P. J. Spangler, larvae (PERC); CHIAPAS: San Cristóbal de las Casas, VII-17-21-1964, P. J. Spangler, larva (PERC); CHIHUAHUA: 9 mi N of Meoqui, VI-26-1964, P. J. Spangler, larvae (PERC); DURANGO: San Juan del Río, VI-27-1964, P. J. Spangler, larvae (PERC); Morcillo, VI-28-1964, P. J. Spangler, larvae (PERC); HIDALGO: Ixmiquilpán, VII-1-1965, P. J. Spangler, larvae (PERC); JALISCO: Guadalajara, VII-30-1963, P. J. Spangler, larvae (PERC); 10 mi N of Chalapa,

VII-31-1963, P. J. Spangler, larvae (PERC); 15 mi N of Chapala, VIII-1-1963, P. J. Spangler, larvae (PERC); OAXACA: 8 mi N of Oaxaca, VII-14-1964, P. J. Spangler, larvae (PERC); 17 mi E of Juchitán, VII-5-1965, P. J. Spangler, larvae (PERC); TAMAULIPAS: Nuevo Morelos, III-28-1965, P. J. Spangler, larvae (PERC); TLAXCALA: 4 mi N of Apizaco, VIII-26-1965, P. J. Spangler, larvae (PERC); VERACRUZ: 15 mi SE of Tantoyuca, VIII-28-1965, P. J. Spangler, larvae (PERC); Cuiclahuac, VIII-10-12-1964, P. J. Spangler, larvae (PERC). The range of this species extends from southeastern United States south to Costa Rica, and it also occurs in the Antilles (Lugo-Ortiz and McCafferty 1996b).

*Callibaetis pictus* (Eaton) — HONDURAS: El Paraíso: Escuela Agrícola Panamericana, X-15-1964, J. S. Packer, larvae (PERC); Uyuca, nr Zamorano, small pond, X-27-1964, P. J. Spangler, larva (PERC); MEXICO: BAJA CALIFORNIA SUR: Arroyo San Pedro, 19 mi W of Hwy 1, VI-27-1988, B. C. Kondratieff, larvae (PERC); CHIAPAS: El Chorreadero, Chapa de Corzo, V-5-1979, J. Bueno, larvae (UNAM); San Cristóbal de las Casas, V-5-1979, J. Bueno Soria, male adult (UNAM); Ocosingo, VI-25-1950, C. and M. Goodnight and L. J. Stannard, female adult (PERC); CHIHUAHUA: 18 mi N of Chihuahua, slow shallow stream, VII-22-1952, R. B. and J. M. Selander and Y. Sedman, larvae (PERC); Nueve Casas Grandes, at light, VIII-26-1986, B. C. Kondratieff, male and female adults (PERC); Arroyo Fresa, 3 mi above jct Río Piedras Verdes, VI-1987, B. C. Kondratieff and R. W. Baumann, male adult (PERC); 25 mi W of Colonia Juárez, Rt 16, small pond, VIII-24-1986, larvae and exuviae (PERC); Ríito, Hwy 16, 10 mi E of Yepachic, VI-28-1987, B. C. Kondratieff and R. W. Baumann, male and female adults (PERC); small stream, 12 mi W of Tomóchic, I-20-1987, B. C. Kondratieff, larva (PERC); DURANGO: La Michilia, Arroyo Nana Juana, Bosque pino-encino, 2400 m, R. Novelo, IV-15-1988, larvae (IEAC); La Michilia, Arroyo Taray, IV-14-1986, R. Novelo and J. González, larvae (IEAC); GUERRERO: S of Tierra Colorada, I-3 1948, S. Mulaik, larvae (PERC); km 15, Carretera Bejucos, nr Ciudad Altamirano, XI-22-1984, larvae (PERC); HIDALGO: San Miguel, Regla, VIII-19-1994, B. C. Kondratieff, male and female adults (PERC); MEXICO: Chapingo, IV-21-1961, F. Pacheco, female adult (UNAM); Chapingo, X-7-1961, F. Pacheco, female adult (UNAM); Chapingo, Criadero de truchas, III-17-1963, F. Pacheco, female adult (UNAM); Nanchititla National Park, Río Los Barbechos, VIII-23-1994, B. C. Kondratieff, female adults (PERC); MEXICO, D. F.: IX-21-1962, N. Angeles and T. Luz, male and female adults (PERC); OAXACA: 8 mi N of Oaxaca, VII-14-1964, P. J. Spangler, larvae (PERC); El Tule, VI-25-1965, R. B. and J. M. Selander, larva (PERC); MICHOACÁN: Tuxpán, I-15-1955, R. B. and J. M. Selander, female adults (PERC); NUEVO LEÓN: 10 mi N of Monterey, Sabinas Hidalgo, XII-27-1947, S. Mulaik, larvae (PERC); PUEBLA: Puebla, 10 mi NE of Atlxco, VIII-26 1965, P. J. Spangler, larvae (PERC); Zacatlán, VIII-17-1994, B. C. Kondratieff, female adults (PERC); Atequexquitla, VIII-19-1994, B. C. Kondratieff, female adults (PERC); Río San Pedro, Zacatlán, VIII-18-1994, B. C. Kondratieff, larvae (PERC); SINALOA: 7 mi N of Rosario, VII-24-1963, P. J. Spangler, larvae (PERC); SONORA: small stream, 10 mi W of Yécora, VIII-19-1986, B. C. Kondratieff, female adult (PERC); intermittent stream, 11 mi E of Yécora, VIII-22-1986, B. C. Kondratieff, male and female adults (PERC); Hwy 11, SW of Tezopuco, I-18-1988, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Yécora, at lights, VIII-21 1986, B. C. Kondratieff, exuviae and male and female subimagos (PERC); TAMAULIPAS: 44 mi S of Matamoros, VI-28-1965, P. J. Spangler, larvae (PERC). This species is widespread in western United States and Mexico, and is found as far south as Costa Rica (Lugo-Ortiz and McCafferty 1996b).

*Camelobaetidius kondratieffi* Lugo-Ortiz and McCafferty — BELIZE: Cayo: Teakettle, I-22-1993, W. D. Shepard, larva (PERC). This species was previously reported from Guatemala only (Lugo-Ortiz and McCafferty 1995d).

*Falliceon quilleri* (Dodds) — GUATEMALA: Solala: Río Pamajachel, ca 4000 ft, V-15-1972, J. Vandermeer, larvae (PERC); Ponajachel, 1550 m, VIII-21-1962, G. G. Musser, larvae (PERC). MEXICO: PUEBLA: Río San Isidro, Zacatlán, VIII-18-1994, B. C. Kondratieff, larvae and adults (PERC); Río San Pedro, Zacatlán, VIII-18-1994, B. C. Kondratieff, larvae (PERC); VERACRUZ: Río La Perla at La Perla, VIII-26-1994, B. C. Kondratieff, male adults (PERC); Río Pancho Pozas, Altotonga, VIII-25-1994, B. C. Kondratieff, male adults (PERC). This species is widespread in the United States, Mexico, and Central America (Lugo-Ortiz *et al.* 1994).

*Moribaetis macaferti* Waltz — HONDURAS: Atlantida: 23 mi S of Tela, on Hwy 9, small stream, X-19-1964, J. S. Packer, larvae (PERC); Comayagua: 3 mi N of Taulabe, on Hwy 1, large river, X-20-1964, J. S. Packer, larvae (PERC); El Paraíso: tributary of Río Guayambre, at jct of Hwy 4 and Río Guayambre, 50 km E of Danlí, VIII-29-1964, J. S. Packer, larvae (PERC); small stream nr Santa María, IX-3-1964, J. S. Packer, larvae (PERC); Escuela Agrícola Panamericana, pond, X-15-1964, J. S. Packer, larvae (PERC); Francisco Morazán: 10 mi E of Guaimaca, on Hwy 3, small stream, XI-6-1964, J. S. Packer, larvae (PERC); Olancho: 45 mi E of jct Hwy 3 and Salama Rd, small stream, XI-6-1964, J. S. Packer, larvae (PERC); 10 mi W of Juticalpa, Río Juticalpa, XI-6-1964, J. S. Packer, larvae (PERC); 1.6 mi W of Campamento Galera turn-off, on Hwy 3, XI-7-1964, J. S. Packer, larva (PERC). MEXICO: PUEBLA: Hwy 106, Pahuatlán, VIII-17-1994, B. C. Kondratieff, larvae (PERC). This species has a range extending from Costa Rica to Chiapas and Veracruz in Mexico (Waltz and McCafferty 1985, Lugo-Ortiz and McCafferty 1994a).

#### CAENIDAE

*Caenis latipennis* Banks — MEXICO: NUEVO LEÓN: Anáhuac, Laguna Salinillas, XI-14-1985, H. Rojas, R. Baroa, and S. Tufiño, male adult (UNAM); Ruinas de Tamuín, V-19-1979, J. Bueno, male adults (UNAM). The range of this species extends from central Canada to Chiapas in Mexico (Provonsha 1990).

#### EPHEMERIDAE

*Hexagenia albivitta* (Walker) — GUATEMALA: Polochi R, III-22-1906, Schwarz and Barber, male and female adults (PERC). The range of this species extends from southeastern Brazil to Veracruz in Mexico (McCafferty 1970, Lugo-Ortiz and McCafferty 1994a).

*Hexagenia limbata* (Serville) — MEXICO: NUEVO LEÓN: Anáhuac, Laguna Salinillas, XI-14-1985, male adult (PERC); SAN LUIS POTOSÍ: El Salto Falls, VI-23-24-1965, O. S. Flint, Jr, male and female subimagos (PERC); El Salto, VI-3-1967, O. S. Flint, Jr, male and female subimagos (PERC). This is a widespread species in the United States (McCafferty 1994), and in Mexico it has been reported previously from Tamaulipas and Jalisco (McCafferty 1968).

*Hexagenia mexicana* Eaton — GUATEMALA: Izabal: Lago Izabal, El Estor, I-5-1988, B. C. Kondratieff, male and female adults (PERC). MEXICO: OAXACA: Tuxtepec. J. Camelo, male adults (PERC). This species was previously reported from Veracruz and Costa Rica only (Eaton 1892, McCafferty 1970).

#### HEPTAGENIIDAE

*Epeorus margarita* Edmunds and Allen — MEXICO: CHIHUAHUA: Río Chuhuichupa, Chuhuichupa Basin, VI-25-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Piedras Verdes, Colonia Juárez, I-16-1987, B. C. Kondratieff, larvae (PERC); Río Piedras Verdes, Colonia Pacheco, I-22-1987, B. C. Kondratieff, larva (PERC); Río Piedras Verdes, nr Pacheco, VI-22-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Gavilán, Los Amarillos, VI-23-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Tomóchic, at Tomóchic, Rt 16, I-20-1987, B. C. Kondratieff, larvae (PERC). This species is also found in Arizona, New Mexico, and Baja California (Allen and Murvosh 1983, Durfee and Kondratieff 1995, Lugo-Ortiz and McCafferty 1995c)

*Epeorus metlacensis* Traver — HONDURAS: El Paraíso: 38 km E of Zancraón, on Hwy 4, X-31-1964, J. S. Packer, larvae (PERC). MEXICO: DURANGO: La Michilia, Arroyo Temazcal, IV-15-1987, R. Novelo, larvae (IEAC); HIDALGO: Zacualtipán, Soyatla, 1800 m, Bosque pinocencino, XI-15-1985, R. Novelo, larvae (IEAC). This species is widespread in Mexico and has been reported as far south as Costa Rica (Allen and Cohen 1977, McCafferty 1985).

*Epeorus packeri* Allen and Cohen — BELIZE: Cayo: 20 mi SE of Belmopán, Sibún R, I-20-1993, W. D. Shepard, larvae (PERC); 13 mi SE of Belmopán, Caves Branch, I-20-1993, W. D.

Shepard, larva (PERC). This species was previously reported from Honduras and Panama (Allen and Cohen 1977).

### ISONYCHIIDAE

*Isonychia sicca* (Walsh) — BELIZE: Cayo: 13 mi SE of Belmopán, Caves Branch, I-20-1993, W. D. Shepard, larvae (PERC). MEXICO: CHIHUAHUA: small stream at jct with Río Casas Grandes, I-16-1987, larvae (PERC); Río Gavilán, Los Amarillos, VI-23-1987, B. C. Kondratieff and R. W. Baumann, larva (PERC); Río Chihuichupa, Chihuichupa Basin, VI-25-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC). This species occurs from as far north as southwestern Minnesota (Eaton 1892, Allen and Cohen 1977, Kondratieff and Voshell 1984).

### LEPTOHYPHIDAE

*Leptohyphes brunneus* Allen and Brusca — MEXICO: GUERRERO: km 15 Carretera Bejucos, nr Ciudad Altamirano, XI-22-1984, larvae (UNAM); SONORA: Río Chico, above El Chico, I-18-1988, B. C. Kondratieff and R. W. Baumann, larvae (PERC). This species is widespread in Mexico and has also been reported from Guatemala (Allen 1978).

*Leptohyphes hispidus* Allen and Brusca — MEXICO: CHIHUAHUA: Río Gavilán, Los Amarillos, VI-23-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Arroyo Lalo Varela, tributary of Río Gavilán, VI-22-1987, B. C. Kondratieff and R. W. Baumann, larva (PERC); Río Piedras Verdes nr Pacheco, VI-22-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC). This species is widespread in Mexico and Central America as far south as Costa Rica (Lugo Ortiz and McCafferty 1995e).

*Leptohyphes packeri* Allen — MEXICO: MORELOS: Jojutla, Vicente Aranda, Río Amacúzac, 800 m, I-15-1983, I. Rocosó, larva (IEAC). This species is known from Arizona and Texas south to Honduras (Lugo-Ortiz and McCafferty 1995e).

### LEPTOPHLEBIIDAE

*Farrodes texanus* Davis — MEXICO: TAMAULIPAS: Río Guayalejo, X-25 1985, J. Bueno, larva (UNAM). This species was previously reported only from southern Texas (Davis 1987).

*Neochoroterpes oklahoma* (Traver) — MEXICO: CHIAPAS: Río Lacan-Ha, km 22.5 carretera Agua Azul-Ocotzingo, VII-22-1978, J. Bueno and J. Padilla, larvae (UNAM). This species occurs in Colorado, New Mexico, Oklahoma, Texas, and northern Mexico (Henry 1993).

*Thraulodes brunneus* Koss — MEXICO: DURANGO: La Michilia, Arroyo Nana Juana, bosque seco de pino-encino, IV-15-1988, R. Novelo Gutiérrez and E. González, larvae (IEAC). This species ranges from Arizona and New Mexico through Mexico (Allen and Brusca 1978).

*Thraulodes packeri* Traver and Edmunds — COSTA RICA: Heredia: Río Sarapiquí, 7 km W of Puerto Viejo, 10.452°N/84.067°W, 50 m, II-11-1986, Morse and Fasth, larvae (FAMU); Limón: Reserva Biológica Hitoy-Cerere, Río Cerere, 9.671°N/83.028°W, 90 m, no date, Holzenthal, Hamilton, and Heyn, larvae (FAMU). This species was previously reported from Chiapas in Mexico and Belize and Honduras (Allen and Brusca 1978, McCafferty 1985).

*Thraulodes speciosus* Traver — GUATEMALA: Izabal: small stream in Río Cahabón, nr Cahaboncito, I-4-1989, B. C. Kondratieff, larva (PERC). MEXICO: CHIHUAHUA: Arroyo Lalo Varela, tributary of Río Gavilán, VI-22-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); small river, jct with Río Casas Grande, I-16-1987, B. C. Kondratieff, larva (PERC); Río Piedras Verdes nr Pacheco, VI-22-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Piedras Verdes, Arroyo Fresas, VI-22-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Gavilán, Los Amarillos, VI-23-1987, B. C. Kondratieff and R. W. Baumann, larvae (PERC); Río Chihuichupa, Chihuichupa Basin, VI-25-1987, B. C. Kondratieff and R. W. Baumann, larva (PERC); GUERRERO: km 145, Carretera Iguala, nr Ciudad Altamirano, XI-23-1984, larvae (UNAM). This species occurs in Arizona and appears to be widespread in Mexico (Lugo-Ortiz and McCafferty 1995c).

*Traverella albertana* (McDunnough) — MEXICO: CHIAPAS: Río Lacan-Ha, km 22.5 carretera Agua Azul-Ocotzingo, VII-22-1978, J. Bueno and J. Padilla, larvae (UNAM); GUERRERO: km 15 carretera Bejucos, nr Ciudad Altamirano, XI-22-1984, Brailovsky *et al.*, larvae (UNAM); HIDALGO: Río Venados, IX-10-1979, G. Zapién, larvae (UNAM); Río Venados, X-6-1979, P. Carter, larvae (UNAM); MORELOS: Jotutla, Vicente Aranda, Río Amacúzac, 800 m, XI-12-1983, S. Ibáñez, larvae (IEAC); same data, II-11-1983; same data, I-15-1983, G. Cardoso; San Rafael, Vicente Aranda, Jotutla, II-27-1982, O. Canol, larvae (IEAC). This species is widespread in the western United States and Mexico (Allen and Murvosh 1987b, Lugo-Ortiz and McCafferty 1995c).

#### POLYMITARCYIDAE

*Campsurus cuspidatus* Eaton — BELIZE: Burrell Boom, Belize R, VI-18-1974, V. Resh, male adults (PERC). The range of this species extends from northeastern Mexico to Nicaragua (McCafferty and Lugo-Ortiz 1992).

*Euthyplocia hecuba* (Hagen) — BELIZE: Cayo: 16.6 km SE of Belmopán, Caves Branch, VIII-3-1993, W. D. Shepard, larva (PERC). HONDURAS: Comayagua: Río Humuya, NW of Comayagua, VIII-3-1967, O. S. Flint, Jr, male adults (PERC). This species occurs from northwestern Argentina to Veracruz in Mexico (Hagen 1861, Ulmer 1920).

#### SIPHONURIDAE

*Siphonurus occidentalis* (Eaton) — MEXICO: HIDALGO: Jacala, XII-31-1947, S. Mulaik, larvae (PERC). This species was known previously from Alberta south to Chihuahua and Sonora (Lugo-Ortiz and McCafferty 1994a).

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#### LITERATURE CITED

- Allen, R. K. 1978. The nymphs of North and Central American *Leptohyphes* (Ephemeroptera: Tricorythidae). *Ann. Entomol. Soc. Am.* 71: 537-558.
- Allen, R. K. and R. C. Brusca. 1978. Generic revisions of mayfly nymphs. II. *Thraulodes* in North and Central America (Leptophlebiidae). *Can. Entomol.* 110: 413-433.
- Allen, R. K. and S. D. Cohen. 1977. Mayflies (Ephemeroptera) of Mexico and Central America: new species, descriptions, and records. *Can. Entomol.* 109: 399-414.
- Allen, R. K. and C. M. Murvosh. 1983. Taxonomy and zoogeography of the mayflies (Ephemeroptera: Insecta) of Baja California. *Ann. Entomol. Soc. Am.* 76: 425-433.
- Allen, R. K. and C. M. Murvosh. 1987a. New Baetidae from the southwestern United States and northwestern Mexico (Insecta: Ephemeroptera), with notes. *Can. Entomol.* 119: 1095-1099.
- Allen, R. K. and C. M. Murvosh. 1987b. Leptophlebiidae of the southwestern United States and northwestern Mexico. *Gr. Basin Natural.* 47: 283-286.
- Cohen, S. D. and R. K. Allen. 1978. Generic revisions of mayfly nymphs. III. *Baetodes* in North and Central America (Baetidae). *J. Kansas Entomol. Soc.* 51: 253-269.
- Davis, J. R. 1987. A new species of *Farrodes* (Ephemeroptera: Leptophlebiidae: Atalophlebiinae) from southern Texas. *Proc. Entomol. Soc. Wash.* 89: 407-416.

- Domínguez, E.** 1995. Cladistic analysis of the *Ulmeritus-Ulmeritoides* group (Ephemeroptera, Leptophlebiidae), with descriptions of five new species of *Ulmeritoides*. *J. New York Entomol. Soc.* 103: 15-38.
- Durfee, R. S. and B. C. Kondratieff.** 1995. Description of adults of *Baetis notos* (Ephemeroptera: Baetidae). *Entomol. News* 106: 71-74.
- Eaton, A. E.** 1892. *Biologia Centrali-Americana, Insecta, Neuroptera, Ephemeridae.* Bernard Quaritch, Ltd., London 38: 1-16.
- Flowers, R. W. and E. Domínguez.** 1992. New genus of Leptophlebiidae (Ephemeroptera) from Central and South America. *Ann. Entomol. Soc. Am.* 85: 655-661.
- Hagen, H. A.** 1861. Synopsis of the Neuroptera of North America, with a list of the South American species: Ephemeridae. *Smithsn. Inst. Misc. Collect.* 1861: 33-55.
- Henry, B. C.** 1993. A revision of *Neochoroterpes* (Ephemeroptera: Leptophlebiidae) new status. *Trans. Am. Entomol. Soc.* 119: 317-333.
- Kondratieff, B. C. and J. R. Voshell, Jr.** 1984. The North and Central American species of *Isonychia* (Ephemeroptera: Oligoneuriidae). *Trans. Am. Entomol. Soc.* 110: 129-244.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1993. Genera of Baetidae (Ephemeroptera) from Central America. *Entomol. News* 104: 193-197.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1994a. New records of Ephemeroptera from Mexico. *Entomol. News* 105: 17-26.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1994b. The mayfly genus *Acerpenna* (Insecta, Ephemeroptera, Baetidae) in Latin America. *Stud. Neotrop. Faun. Environ.* 29: 65-74.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1995a. *Guajirolus nanus* (Ephemeroptera: Baetidae), a new species from Costa Rica. *Entomol. News* 106: 68-79.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1995b. New species, stage description, and records of *Baetodes* (Ephemeroptera: Baetidae) from Mexico and Central America. *Entomol. News* 106: 81-86.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1995c. Annotated inventory of the mayflies (Ephemeroptera) of Arizona. *Entomol. News* 106: 131-140.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1995d. Taxonomy of the North and Central American species of *Camelobaetidius* (Ephemeroptera: Baetidae). *Entomol. News* 106: 178-192.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1995e. Contribution to the taxonomy of the Leptohiphidae (Insecta: Ephemeroptera) of Central America. *Stud. Neotrop. Faun. Environ.* 30: 165-176.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1996a. Central American *Tortopus* (Ephemeroptera: Polymitarcyidae): a unique new species and new country records. *Entomol. News* 107: 23-27.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1996b. Contribution to the taxonomy of *Callibaetis* (Ephemeroptera: Baetidae) in southwestern North America and Middle America. *Aq. Insects* 18: 1-9.
- Lugo-Ortiz, C. R. and W. P. McCafferty.** 1996c. New species of Leptophlebiidae (Ephemeroptera) from Mexico and Central America. *Ann. Limnol.* 32: 3-19.
- Lugo-Ortiz, C. R., W. P. McCafferty, and R. D. Waltz.** 1994. Contribution to the taxonomy of the Panamerican genus *Falleon* (Ephemeroptera: Baetidae). *J. New York Entomol. Soc.* 102: 460-475.
- McCafferty, W. P.** 1968. The mayfly genus *Hexagenia* in Mexico. *Proc. Entomol. Soc. Wash.* 70: 358-359.
- McCafferty, W. P.** 1970. Neotropical nymphs of the genus *Hexagenia* (Ephemeroptera: Ephemeridae). *J. Georgia Entomol. Soc.* 5: 224-228.
- McCafferty, W. P.** 1985. New records of Ephemeroptera from Middle America. *Intern. Quart. Entomol.* 1: 9-11.
- McCafferty, W. P.** 1994. Distributional and classificatory supplement of the burrowing mayflies (Ephemeroptera: Ephemeroidea) of the United States. *Entomol. News* 105: 1-13.
- McCafferty, W. P.** 1996. The mayflies (Ephemeroptera) of North America online. *Entomol. News* 107: 61-63.

- McCafferty, W. P. and C. R. Lugo-Ortiz.** 1992. Registros nuevos y notes sobre los Ephemeroptera de Nicaragua. *Rev. Nica. Entomol.* 19: 1-7.
- McCafferty, W. P. and C. R. Lugo-Ortiz.** 1994. Taxonomic status of three species of *Fallceon* (Ephemeroptera: Baetidae). *Entomol. News* 105: 161-163.
- McCafferty, W. P. and C. R. Lugo-Ortiz.** 1996a. Los efemerópteros (Ephemeroptera) de América Central. *Rev. Nica. Entomol.* 35: 19-28.
- McCafferty, W. P. and C. R. Lugo-Ortiz.** 1996b. Ephemeroptera. Pages 133-145. *In* J. L. Bousquets, A. N. García-Aldrete, and E. González-Soriano (eds.). Biodiversity, taxonomy and biogeography of Mexican arthropods: towards a synthesis. Universidad Nacional Autónoma de México, México D.F., in press.
- McCafferty, W. P. and A. V. Provonsha.** 1993. New species, subspecies, and stage descriptions of Texas Baetidae (Ephemeroptera). *Proc. Entomol. Soc. Wash.* 95: 59-69.
- McCafferty, W. P. and R. D. Waltz.** 1990. Revisionary synopsis of the Baetidae (Ephemeroptera) of North and Middle America. *Trans. Am. Entomol. Soc.* 116: 769-799.
- McCafferty, W. P., R. W. Flowers, and R. D. Waltz.** 1992. The biogeography of Mesoamerican mayflies. Pages 173-193. *In* S. P. Darwin and A. L. Welden (eds.). Biogeography of Mesoamerica: proceedings of a symposium. Tulane Univ. Stud. Zool. Bot., Suppl. Publ. 1.
- Provonsha, A. V.** 1990. A revision of the genus *Caenis* in North America (Ephemeroptera: Caenidae). *Trans. Am. Entomol. Soc.* 116: 801-884.
- Ulmer, G.** 1920. Über die Nymphen einiger exotischen Ephemeropteren. *Festch. Zsch.* 25: 3-25.
- Waltz, R. D. and W. P. McCafferty.** 1985. *Moribaetis*: a new genus of Neotropical Baetidae (Ephemeroptera). *Proc. Entomol. Soc. Wash.* 87: 239-251.
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