

A CATALOG OF THE EPHEMEROPTERA OF THE PHILIPPINES¹

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Abstract: The Ephemeroptera known from the Philippines are listed, with references to literature and information on types and type localities included for each species. A bibliography of works pertaining to Philippine Ephemeroptera is included.

At present there are only about 20 species of mayflies described from the Philippines. This is not by any means a reflection of a paucity of species of mayflies in the area, but is due to the fact that, until now, collections in this region have been very few and sporadic. Despite the limited number of species described, the literature references are so scattered and difficult to locate that we thought it advisable to assemble them into 1 source to aid people interested in working with the mayfly fauna of this region and to encourage others to continue to work in this area. A bibliography of references treating this fauna follows the catalog.

In the catalog which follows, each species of Ephemeroptera known from the Philippines is listed with citations of references pertaining to them. Bracketed information following each citation for a species indicates the kind of information the reference contains. The following terms are used:

- ♂, ♀ — sex of the adult mentioned in the reference
- nym. — nymph stage mentioned in reference
- des. — a description or descriptive material is contained in reference
- fig. — reference contains a figure or plate illustrating the species
- key — the species is contained in a key
- type — information on the type or types is provided (i.e., sex, type-locality, depositories of type material)

The following abbreviations are used for museums containing types of Philippine Ephemeroptera: (BMNH) British Museum of Natural History, London; (BRUXELLES) Bruxelles Museum, Bruxelles; (FMNH) Field Museum of Natural History, Chicago; (HAMBURG) Zoologisches Museum der Universität, Hamburg.

FAMILY BAETIDAE

GENUS *Cloeon* Leach

Cloeon Leach, 1815, Brewster's Edinburgh Encycl. **9**: 137.

Type-species: *Ephemera diptera* Linnaeus. Monotypy.

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Cloe Burmeister, 1839, Handb. Entomol. 2 (2): 799. [Emendation.]

Type-species: *Ephemera diptera* Linnaeus. Objective synonymy.

Cloeopsis Eaton, 1866, Ann. Mag. Nat. Hist., Ser 3, 18: 146.

Type-species: *Ephemera diptera* Linnaeus. Monotypy.

Neocloeon Traver, 1932, J. New York Entomol. Soc. 40: 365.

Type-species: *Neocloeon alamance* Traver. Original designation.

Austrocloeon Barnard, 1940, Ann. S. Afr. Mus. 32: 616.

Type-species: *Cloeon africanum* Esben-Petersen. Original designation.

***Cloeon exiguum* Navás. Philippines.**

Cloeon exiguum Navás, 1918, Mem. Pontif. Accad. Romana Nuovi Lincei, ser. 2, 4: 2 [♀ des.; type: Manila, Philippines] (nec *Austrocloeon exiguum* Crass, 1947=*Cloeon agnewi* Hubbard). — Lestage, 1929, Ann. Soc. Entomol. Fr. 98: 99 [key].

***Cloeon marginale* (Hagen). Philippines, India, Sri Lanka, Simalur, Java, Sumatra, Formosa, Tonkin, China.**

Cloe marginalis Hagen, 1858, Verh. Zool. Bot. Ges. Wien 8: 477 [♀ des.; type: Rainbodde, Ceylon (Sri Lanka)]; 1859, Verh. Zool. Bot. Ges. Wien 9: 206 [♀ des.].

Cloeon marginale: Eaton, 1885, Trans. Linn. Soc. London, ser. 2, Zool. 3: 181 [♂, ♀ des.]. — Ulmer, 1912, Entomol. Mitt. 1: 369; 1913, Notes Leyden Mus. 35: 115. — Lestage, 1918, Rev. Zool. Afr. 6: 102; 1921, Ann. Soc. Entomol. Belg. 61: 221; 1924, Faun. Entomol. Indochin. Fr. 1924: 92. — Ulmer, 1924, Treubia 6: 56 [♂, ♀ des., fig., key]. — Lestage, 1928, Insects of Samoa, part 7: 49; 1929, Ann. Soc. Entomol. Fr. 98: 99 [key]. — Navás, 1931, Rev. Acad. Cienc. Zaragoza 15: 21. — Wu, 1935, Cat. Insectorum Sin. 1: 250. — Ulmer, 1939, Arch. Hydrobiol., Suppl. 16: 531. — Fernando, 1965, Bull. Freshwater Fish. Res. Sta., Ceylon 17: 187.

Chloeon marginata: Needham, 1909, Rec. Indian Mus. 3: 191.

Cloeon marginalis: Chopra, 1924, Rec. Indian Mus. 26: 419 [♀ des., fig.].

***Cloeon longistylus* Demoulin. Philippines.**

Cloeon longistylus Demoulin, 1969, Entomol. Medd. 37: 231 [♂ des., fig.; type: ♂, Balabac, Dalawan [Palawan?] Bay, Philippines].

***Cloeon rubellum* Navás. Philippines.**

Cloeon rubellum Navás, 1923, Mem. Pontif. Accad. Romana Sci. Nuovi Lincei, Ser. 2, 6: 3 [♂ des.; type: Vigan, Philippines]. — Lestage, 1929, Ann. Soc. Entomol. Fr. 98: 100 [key].

GENUS **Procloeon** Bengtsson

Pseudocloeon Bengtsson, 1914, Entomol. Tidskr. **35**: 218.

Type-species: *Cloeon bifidum* Bengtsson. Original designation. Name preoccupied by Klapálek, 1905.

Procloeon Bengtsson, 1915, Entomol. Tidskr. **36**: 34.

Type-species: *Cloeon bifidum* Bengtsson. Objective synonymy.

Procloeon bimaculatum (Eaton). Philippines, India, Burma, Sri Lanka, Tonkin, Java, Sumatra, Thailand, China, Bangladesh.

Cloeon bimaculatum Eaton, 1885, Trans. Linn. Soc. London, ser. 2, Zool. **3**: 182 [♂, ♀ des., fig.; type: ♀, Ceylon (BMNH)]. Lectotype designated by Kimmins, 1947. — Klapálek, 1905, Mitt. Naturhist. Mus. Hamburg **22**: 106. — Ulmer, 1913, Notes Leyden Mus. **35**: 113 [♀ des., fig.]. — Lestage, 1921, Ann. Soc. Entomol. Belg. **61**: 219 [♂, ♀ des.]; 1924, Faun. Entomol. Indochin. Fr. **1924**: 90 [♂, ♀ des.]. — Ulmer, 1924, Treubia **6**: 60 [♂, ♀ des., fig., key]. — Navás, 1926, Broteria **23**: 101. — Lestage, 1928, Insects of Samoa, part 7: 49; 1929, Ann. Soc. Entomol. Fr. **98**: 99 [key]. — Navás, 1931, Rev. Acad. Cienc. Zaragoza **15**: 21. — Wu, 1935, Cat. Insectorum Sin. **1**: 250. — Ulmer, 1939, Arch. Hydrobiol., Suppl. **16**: 532; 1940, Arch. Hydrobiol., Suppl. **16**: 650 [nym. des., fig.].

Chloeon bimaculatum: Needham, 1909, Rec. Indian Mus. **3**: 191 [♂, ♀ des., fig.].

Procloeon bimaculatum: Kimmins, 1947, Proc. R. Entomol. Soc. London, B, **16**: 92 [♂, ♀ des., fig., lectotype des.]. — Gillies, 1949, Trans. R. Entomol. Soc. London **100**: 176. — Kimmins, 1960, Bull. Br. Mus. (Nat. Hist.), Entomol. **9**: 292 [♂ fig.]. — Fernando, 1965, Bull. Freshwater Fish. Res. Sta., Ceylon **17**: 187.

GENUS **Pseudocloeon** Klapálek

Pseudocloeon Klapálek, 1905, Mitt. Naturhist. Mus. Hamburg **22**: 105.

Type-species: *Pseudocloeon kraepelini* Klapálek. Monotypy. (nec Bengtsson, 1914, Entomol. Tidskr. **35**: 218; nec Matsumura, 1931, 6000 Illus. Insects Jpn Emp.: 1473).

Pseudocloeon boettgeri Ulmer. Philippines, Sumatra.

Pseudocloeon boettgeri Ulmer, 1924, Treubia **6**: 70 [♂, ♀ des., fig., key; type: ♂♂, Dansalan, Mindanao, Philippines (HAMBURG)]. — Ulmer, 1939, Arch. Hydrobiol., Suppl. **16**: 534 [♂ des.]. — Weidner, 1964, Mitt. Hamburg Zool. Mus. Inst. **61**: 135.

Pseudocloeon sp. 1 Demoulin. Philippines, Bismarck Archipelago.

Pseudocloeon sp. 1 Demoulin, 1969, Entomol. Medd. **37**: 229 [nym. des., fig.].

FAMILY HEPTAGENIIDAE

GENUS *Atopopus* Eaton

Atopopus Eaton, 1881, Entomol. Mon. Mag. **18**: 22.

Type-species: *Atopopus tarsalis* Eaton. Original designation.

Atopopus tibialis Ulmer. Philippines, Borneo.

Atopopus tibialis Ulmer, 1920, Arch. Naturgesch, A **85** (11): 66 [♂, ♀ des., fig.; type: ♂, Panaon, Philippines (BRUXELLES, legs on slide in HAMBURG)]; 1924, Treubia **6**: 76 [♂ des., fig.]; 1939, Arch. Hydrobiol., Suppl. **16**: 548 [♂ des., fig.]. —Weidner, 1964, Mitt. Hamburg Zool. Mus. Inst. **61**: 131.

GENUS *Ecdyonurus* Eaton

Ecdyonurus Eaton, 1868b, Trans. Entomol. Soc. London **1868**: 142.

Type-species: *Ephemera venosa* Fabricius. Original designation.

Ecdyurus Eaton, 1871, Trans. Entomol. Soc. London **1871**: 25. [Emendation]

Type-species: *Ephemera venosa* Fabricius. Objective synonymy.

Cinygmoides Matsumura, 1931, 6000 Illus. Insects Jpn Emp.: 1477.

Type-species: *Cinygmoides hekachii* Matsumura. Monotypy.

Ecdyonurus illotus Navás. Philippines.

Ecdyonurus illotus Navás, 1933, Mem. Pontif. Accad. Romana Sci. Nuovi Lincei, ser. 2, **17**: 91 [♀ des.; type: Haightplace, Philippines].

Ecdyonurus lobatus Ulmer. Philippines.

Ecdyonurus lobatus Ulmer, 1924, Treubia **6**: 83 [♂, ♀ des., fig.; type: ♂♂, ♀♀, Dansalan, Mindanao, Philippines (HAMBURG)]. —Weidner, 1964, Mitt. Hamburg Zool. Mus. Inst. **61**: 133.

GENUS *Thalerosphyrus* Eaton

Thalerosphyrus Eaton, 1881, Entomol. Mon. Mag. **18**: 22.

Type-species: *Baetis determinatus* Walker. Original designation.

Thalerosphyrus torridus (Walker). Philippines, Sumatra.

Baetis? torrida Walker, 1853, List Neuropt. Insects Br. Mus. **3**: 571 [♀ des.; type: ♀, Philippine Is (BMNH)].

Heptagenia torrida: Eaton, 1871, Trans. Entomol. Soc. London **1871**: 157 [♀ des.].

Thalerosphyrus torridus: Eaton, 1885, Trans. Linn. Soc. London ser. 2, Zool. **3**: 233 [♀

des.]. — Ulmer, 1924, *Treubia* **6**: 81 [♂, ♀ des., fig.]; 1939, *Arch. Hydrobiol.*, Suppl. **16**: 551.

Thalerosphyrus horridus: Navás, 1922, *Bol. Soc. Entomol. Esp.* **5**: 60 [♀ des.].

FAMILY EPHEMERELLIDAE

GENUS *Teloganodes* Eaton

Teloganodes Eaton, 1882, *Entomol. Mon. Mag.* **18**: 208.

Type-species: *Cloe tristis* Hagen. Original designation.

Teloganodes tristis (Hagen). Philippines, Sri Lanka, Java, Sumatra.

Cloe tristis Hagen, 1858, *Verh. Zool. Bot. Ges. Wien* **8**: 476 [♀ des.; type: Rainbodde, Ceylon].

Leptophlebia tristis: Hagen, 1873, *Trans. Entomol. Soc. London* **1873**: 394.

Teloganodes tristis: Eaton, 1882, *Entomol. Mon. Mag.* **18**: 208; 1884, *Trans. Linn. Soc. London*, ser. 2, *Zool.* **3**: 135 [♀ des., fig.]. — Ulmer, 1924, *Treubia* **6**: 44 [♂, ♀ des., fig.]; 1939, *Arch. Hydrobiol.*, Suppl. **16**: 512 [♂, ♀ des., fig.]; 1940, *Arch. Hydrobiol.*, Suppl. **16**: 627 [nym. des., fig.].

FAMILY TRICORYTHIDAE

GENUS *Neurocaenis* Navás

Neurocaenis Navás, 1936, *Rev. Zool. Bot. Afr.* **28**: 365.

Type-species: *Neurocaenis fuscata* Navás. Original designation.

Neurocaenis jacobsoni (Ulmer). Philippines, Java, Sumatra, Sri Lanka.

Tricorythus jacobsoni Ulmer, 1913, *Notes Leyden Mus.* **35**: 105 [♂ des., fig.; type: ♂, Wonosobo, Java (HAMBURG)]; 1924, *Treubia* **6**: 50 [♂, ♀ des., fig.]; 1939, *Arch. Hydrobiol.*, Suppl. **16**: 521; 1940, *Arch. Hydrobiol.*, Suppl. **16**: 638 [nym. des., fig.]. — Weidner, *Mitt. Hamburg Zool. Mus. Inst.* **61**: 136.

Neurocaenis jacobsoni: Demoulin, 1954, *Bull. Ann. Soc. Entomol. Belg.* **90**: 270.

FAMILY CAENIDAE

GENUS *Caenis* Stephens

Caenis Stephens, 1835, *Illus. Br. Entomol.*, *Mandibulata* **6**: 60.

Type-species: *Caenis macrura* Stephens. Subsequent designation by Eaton, 1868a, *Entomol. Mon. Mag.* **5**: 82.

Oxygypha Burmeister, 1839, *Handb. Entomol.* **2** (2): 797.

Type-species: *Oxygypha luctuosa* Burmeister. Subsequent designation by Jacob, 1974, *Reichenbachia* **15**: 94.

Ordella Campion, 1923, Ann. Mag. Nat. Hist., ser. 9, **11**: 518.

Type-species: *Caenis macrura* Stephens. Original designation.

Caenis annulata Navás. Philippines.

Caenis annulata Navás, 1923, Mem. Pontif. Accad. Romana Sci. Nuovi Lincei, ser. 2, **6**: 1
[♂ des.; type: Vigan, Luzon, Philippines].

Caenis annulata: van Bruggen, 1954, Zool. Meded. **33**: 13 [♀ des.].

Caenis pumila Navás. Philippines.

Caenis pumila Navás, 1923, Mem. Pontif. Accad. Romana sci. Nuovi Lincei, ser. 2, **6**: 1
[♂, ♀ des.; type: Vigan, Luzon, Philippines]. —van Bruggen, 1954, Zool. Meded. **33**: 13
[♀ des.].

GENUS **Caenodes** Ulmer

Caenodes Ulmer, 1924, Denkschr. Akad. Wiss. Wien Math. —Naturwiss. Kl. **99**: 7.

Type-species: *Caenis cibaria* sensu Ulmer (= *Caenodes ulmeri* Kimmins). Monotypy.

Caenodes nigropunctata (Klapálek). Philippines, Java, Sumatra, Bali.

Caenis nigropunctata Klapálek, 1905, Mitt. Naturhist. Mus. Hamburg **22**: 104 [♀ des.;
type: ♀♀, Buitenzorg, Java (HAMBURG)]. —Ulmer, 1913, Notes Leyden Mus. **15**: 106 [egg
des., fig.]; 1924, Treubia **6**: 46 [♂, ♀ des.]; 1939, Arch. Hydrobiol., Suppl. **16**: 520 [♂, ♀
des., fig.]; 1940, Arch. Hydrobiol., Suppl. **16**: 635 [nym. des., fig.]. —van Bruggen,
1954, Zool. Meded. **33**: 13.

Caenodes nigropunctata: Thew, 1960, Trans. Am. Entomol. Soc. **86**: 199.

Caenis nigripunctata: Weidner, 1962, Mitt. Hamburg Zool. Mus. Inst. **60**: 99.

Caenodes philippinensis Ulmer. Philippines.

Caenodes philippinensis Ulmer, 1924, Treubia **6**: 48 [♂ des., fig.; type: ♂♂, Bilaran,
Philippines (HAMBURG)].

Caenodes philippensis: Weidner, 1964, Mitt. Hamburg Zool. Mus. Inst. **61**: 132.

FAMILY PROSOPISTOMATIDAE

GENUS **Prosopistoma** Latreille

Prosopistoma Latreille, 1833, Ann. Mus. Hist. Nat., Paris, 3^e Sér., **2**: 33.

Type-species: *Prosopistoma variegatum* Latreille. Subsequent designation by Eaton,
1884, Trans. Linn. Soc. London, ser. 2, Zool. **3**: 150.

Chelysentomon Joly & Joly, 1872, Mem. Acad. Sci. Inscriptions B.-L. Toulouse, 7^e Sér., 4: 438.

Type-species: *Prosopistoma punctifrons* Latreille. Original designation.

Prosopistoma boreus Peters. Philippines.

Prosopistoma boreus Peters, 1967, Tijdschr. Entomol. 110: 214 [nym. des., fig., key; type: nym., Burungkot, Upi nr Cotabato, Mindinao, Philippines (FMNH)]. —Hubbard, 1978, Proc. 2nd Int. Conf. Ephemeroptera, Kraków, in press.

Prosopistoma palawana Peters. Philippines.

Prosopistoma palawana Peters, 1967, Tijdschr. Entomol. 110: 213 [nym. des., fig., key; type: nym., Bacungan, nr Puerto Princesa, Palawan, Philippines (FMNH)]. —Hubbard, 1978, Proc. 2nd Int. Conf. Ephemeroptera, Kraków, in press.

FAMILY EPHEMERIDAE

GENUS **Hexagenia** Walsh

Hexagenia Walsh, 1863. Proc. Entomol. Soc. Philadelphia 2: 197.

Type-species: *Ephemerella limbata* Serville. Subsequent designation by Eaton, 1868a. Entomol. Mon. Mag. 5: 85.

Hexagenia philippina Navás. Philippines.

Hexagenia philippina Navás, 1933. Mem. Pontif. Accad. Romana Sci. Nuovi Lincei, ser. 2, 17: 88 [♀ des., fig.; type: Zamboanga, Mindanao, Philippines].

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