

A NEW SPECIES OF *BAETIS* FROM PANAMA
(EPHEMEROPTERA: BAETIDAE)

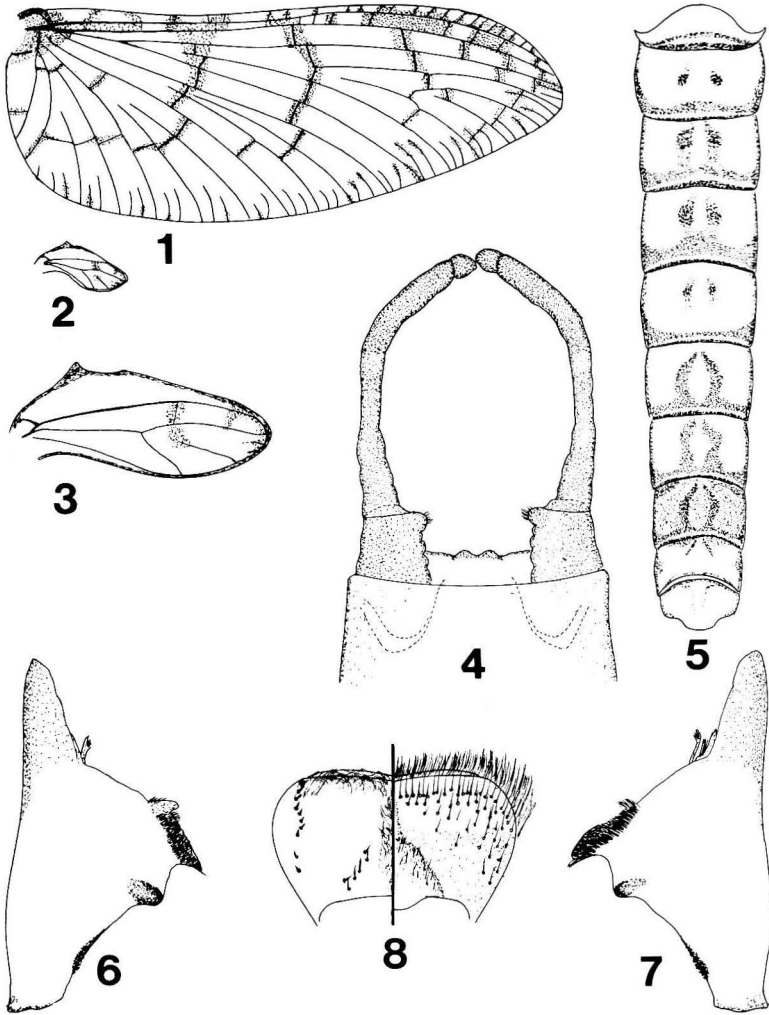
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Recently, a specimen of a new and unusually large species of *Baetis* from Panamá was sent to the Laboratory of Aquatic Entomology by Dr. Henk Wolda, Smithsonian Tropical Research Institute. The specimen was taken in a light trap in the forest canopy in the Valle de la Sierpe at the IRHE (Institución de Recursos Hidráulicos y Electrificación) camp in Hornitos near the Río Chiriquí, Chiriquí Province. This locality is referred to both locally and in the literature (Wolda, 1978) as Fortuna. In November and December 1977, I visited this locality and collected and reared additional specimens of this mayfly. Nymphs were also collected in a small stream flowing through disturbed forest above a coffee-growing area near the town of Boquete, Chiriquí Province.

***Baetis maculipennis*, new species**

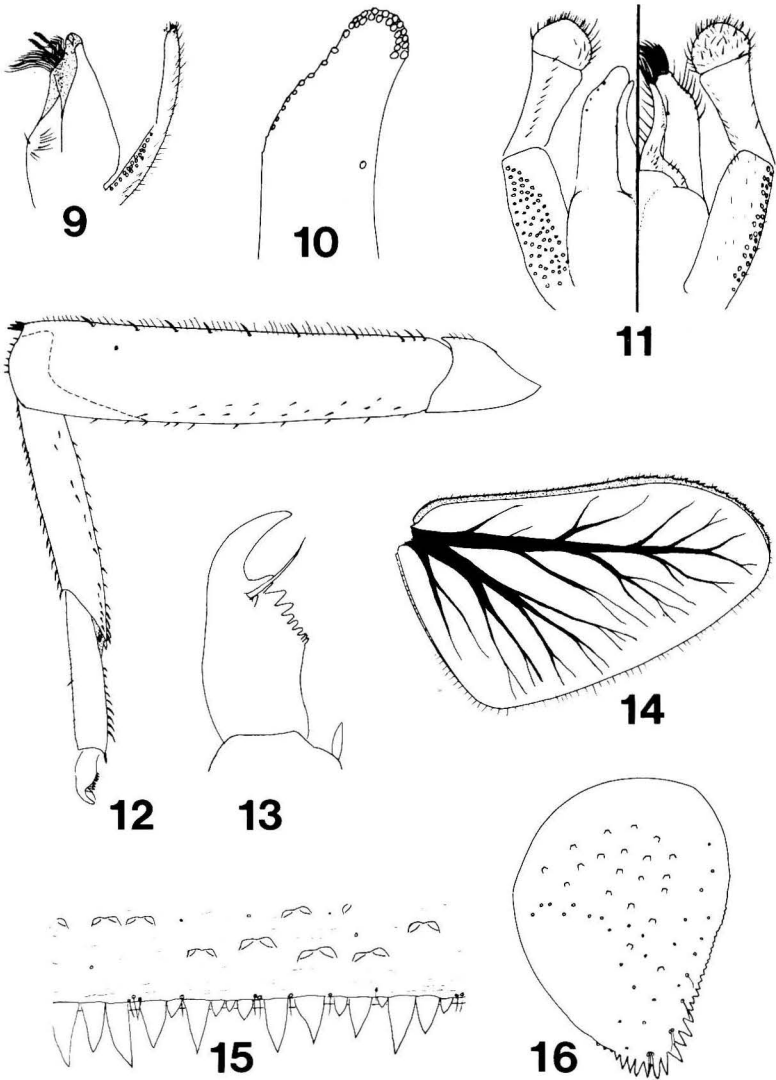
Male imago.—Length: body, 10.2–10.5 mm; fore wings, 9.0–9.2 mm; hind wings, 1.1–1.5 mm; cerci, ca. 23 mm. Head yellowish-white; base of ocelli and antennae, edge of frontal shelf, and carina from median ocellus to edge of frontal shelf dark brown; turbinate eyes yellow-brown, medially contiguous. Thorax grayish-white; margins of pronotum dark brown, brown areas laterally; mesonotum with median brown stripe, mesoscutellum white, pleura and sterna shaded with brown; metanotum grayish-white anteriorly, brown posteriorly, with median dark brown transverse band covering metascutellum, metascutellum projecting posteriorly. Legs yellowish-white; coxae with apical margin dark brown; femora dark brown, apex with dark brown median spot; tibiae dark brown at apex; fore tarsi yellowish-white, apex of each segment brown; middle and hind tarsi yellowish-white on basal segments, apical segments smoky brown. Wings hyaline with brown markings as in Figs. 1–3; stigmatic area of fore wings milky. Abdomen (Fig. 5) yellowish-white, lateral and posterior margins of terga brown with paired submedian brown maculae on terga 2–8, maculae elongated and connected with posterior border on terga 3, 4, 6–8; tergum 8 washed with brown, tergum 9 brown on anterior and lateral margins; tergum 10 light brown on anterior and lateral margins; sterna yellowish-white, pale brown on lateral margins. Genitalia as in Fig. 4; subgenital plate yellowish-white, middle and



Figs. 1–8. *Baetis maculipennis*. Figs. 1–5, Male imago. Fig. 1, Fore wing. Fig. 2, Hind wing. Fig. 3, Hind wing enlarged. Fig. 4, Genitalia, ventral view. Fig. 5, Abdomen, dorsal view. Figs. 6–8, Mature nymph. Fig. 6, Left mandible. Fig. 7, Right mandible. Fig. 8, Labrum (ventral view on left, dorsal view on right).

lateral margins slightly darker, forceps dark smoky brown. Cerci: base with alternating white and pale brown segments, followed by repeating sequence of one white and 3 pale brown segments; apical half smoky brown; all segments darker brown at apex.

Female imago.—Unknown.



Figs. 9–16. *Baetis maculipennis*, mature nymph. Fig. 9, Right maxilla. Fig. 10, Paraglossa of labium, ventral view with setae removed. Fig. 11, Labium (dorsal view on left, ventral view on right). Fig. 12, Mesothoracic leg. Fig. 13, Claw of mesothoracic leg. Fig. 14, Gill 4. Fig. 15, Apical edge of abdominal tergum 7. Fig. 16, Paraproct.

Mature nymph.—Length male: body, 10.1–10.3 mm; cerci, 7.0 mm; terminal filament, 4.5 mm. Length female: body, 9.9–11.1 mm; cerci, 6.7–8.2 mm; terminal filament, 4.0 mm. Head yellowish-brown, vertex darker; dark brown between ocelli and on base of labrum; brown shading on outer side

of scape and pedicel of antennae. Mouthparts: labrum (Fig. 8) with raised median area, dorsal surface with long setae, sublateral row of short setae on ventral surface; mandibles with all canines fused into long blades (Figs. 6, 7), often completely worn away during an instar; maxillary palpi 2-segmented, subequal to galea-lacinia (Fig. 9); segment 3 of labial palpi broader than long, segment 2 with weak inner apical lobus (Fig. 11), paraglossae with 2 close ventral rows of bristles at apex (Fig. 10). Thorax light yellowish-brown, midline of pro- and mesonota darker. Legs yellowish-white; femora shaded with light yellowish-brown on middle and apex, dark brown median spot on inner side, dorsal edge fringed with fine setae and with short spines spaced regularly along dorsal edge and grouped at apex above insertion of tibiae (Fig. 12); tibiae with heavy setae along dorsal and ventral edges; tarsi and claws yellowish-brown, tarsi with fine dorsal and stout ventral setae, claws with 8 denticles and long curved setae (Fig. 13). Abdominal terga light yellowish-brown, terga 6-7 darker; pale streaks at midline and laterally on terga 2-9, brown submedian and posterior markings on terga 2-8 as in male imago; markings darkest on terga 6-7, lightest on 5; sterna white, slightly darker at lateral margins; terga and sterna densely covered with pores except at muscle insertions; tergal hind margins with sharp denticles (Fig. 15). Gills (Fig. 14) with sclerotized anterior and posterior basal margins, apical edge serrate with 2-3 fine setae between serrations; tracheae distinct; gills of segment 1 smaller than those of following segments. Paraprocts (Fig. 16) with short denticles along inner margin, long teeth at apex, surface with scattered pores and fine setae. Cerci with dense row of setae on inner margins; terminal filament with dense row of lateral setae.

Holotype.—Male Imago (reared, with nymphal exuvium and subimaginal skin): PANAMÁ: Chiriquí Province, Fortuna (8°44'N:82°15'W), Río Chiriquí, 1050 m, 12-XII-1977, R. W. Flowers. Deposited at Florida A&M University.

Paratypes.—1 male imago, same locality, 8/14-VI-1977 (light trap), Henk Wolda; 1 male imago, same locality, 27-IV/3-V-1978 (light trap), Henk Wolda; 1 nymph, same data as holotype; 1 nymph, 11-XII-1977, 2 nymphs, 13-XII-1977, 1 nymph, 14-XII-1977, all same locality and collector as holotype; 18 nymphs, PANAMÁ: Chiriquí Province, stream above Alto Lino, 1464 m, 18-XII-1977, R. W. Flowers. All specimens are preserved in alcohol. One male paratype and 5 nymphal paratypes are in the U.S. National Museum collection. All others are deposited in the collections of Dr. I. Müller-Leibnau, Plön, or at Florida A&M University.

Etymology.—*macula*, L., meaning spot; *pennis*, L., meaning wing.

The imago of *B. maculipennis* may be distinguished from all other known *Baetis* by the combination of large size and dark markings on both pairs of wings. Nymphs may be distinguished from other *Baetis* nymphs by the combination of (1) group of spines at apex of femora, (2) large size, and (3)

abdominal pattern of mature specimens. Nymphs from Alto Lino differ from Río Chiriquí nymphs as follows: dark area on mesonotum more extensive; ground color of abdominal terga, except 6 and 7, lighter; no darkening at lateral margins of sterna.

Baetis maculipennis was collected in swift water by turning large rocks. It occurs with other species of *Baetis*, *Dactylobaetis*, *Baetodes*, *Thraulodes*, and *Epeorus*. Daytime water temperature was 19°C. Gut contents consisted of sand, diatoms and organic detritus. The nymphs apparently scrape the surface of rocks, ingesting sand and its associated *aufwuchs*. In the one successful rearing, the subimago emerged in the evening. Imagos were caught in the light trap, which is some distance from the river, between sunset and 10 PM (when the trap operates).

Acknowledgments

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Literature Cited

- Wolda, H. 1978. Estudios ecológicos sobre Insectos en la región de Fortuna y su importancia para la conservación de la naturaleza. *ConCiencia* 5: 3-6.