

TWO NEW SPECIES OF *EPHEMERA* FROM SOUTH INDIA (EPHEMEROPTERA: EPHEMERIDAE)

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Abstract. Two new species of *Ephemera*, *E. distincta* and *E. nathani*, are described from South India.

A series of mayflies from South India collected for the Bernice P. Bishop Museum by P. S. Nathan contained specimens of 2 new species of *Ephemera* Linnaeus. All specimens were dried in envelopes and later placed into alcohol.

Because the larval stage is unknown for both of these new species, assignment to subgenus is not possible. Both the subgenera *Ephemera* and *Aethephemera* McCafferty & Edmunds are known from India, but adult characters are known only for *Ephemera* (s.s.) (cf. McCafferty & Edmunds 1973).

Hubbard & Peters (1978) list 9 species of *Ephemera* known from India. The addition of these 2 new species brings the known total to 11.

Ephemera distincta Hubbard, new species

Fig. 3-6

♂ *imago*. Length: body, 14.0-15.0 mm; fore wings, 13.0 mm; hind wings, 4.75 mm. Eyes black. *Thorax*: pronotum dark brown, yellowish laterally, with transparent median longitudinal stripe; mesonotum yellowish, with dark brown median scutal hump and lateral scutellar humps, dark brown between outer parapsidal furrows and notal furrows, and brown marks extending on each side from median scutal hump onto scutum; metanotum yellowish, marked with brown; sternum yellowish with chalky white median longitudinal stripe; mesosternum and metasternum each with a distinctive black median macula; pleura yellowish, marked with brown and chalky white. *Legs*: fore legs brownish, lighter on coxae, trochanters, and proximal portion of femora, darker at tibial-tarsal joints; middle and hind legs yellowish, claws slightly darker. *Fore wings*: membrane hyaline except brown tint in subcostal and pterostigmal areas, faint brown tint in distal 1/3 of wings; longitudinal veins yellowish brown, fading posteriorly; crossveins brown; brown spots at bullae of R₂ and R₄₊₅ and at fork of MA. *Hind wings*: membrane hyaline except brown tint along outer edge; longitudinal veins yellowish, color fading posteriorly; vein R darker; crossveins brownish, color fading posteriorly. *Abdomen* (Fig. 3-4): dorsum (Fig. 3-4) yellowish; tergum I with brown transverse band posteriorly, dilating laterally; terga II-IX with pair of median brown longitudinal stripes meeting anteriorly and posteriorly, and brown transverse band posteriorly; terga II-VIII with broad lateral pair of indistinct light brown longitudinal stripes becoming more defined on IX; tergum IX with pair of black maculae posteriorly; terga IX and X marked with chalky white and brown; venter (Fig. 3) translucent yellowish, sterna VIII and IX marked with chalky white and brown; sterna II-VIII or III-VIII with pair of brown longitudinal stripes; sternum IX with pair of large irregular brown spots. *Genitalia* (Fig. 5-6): forceps yellowish, lightly marked with brown at basal joint and joint

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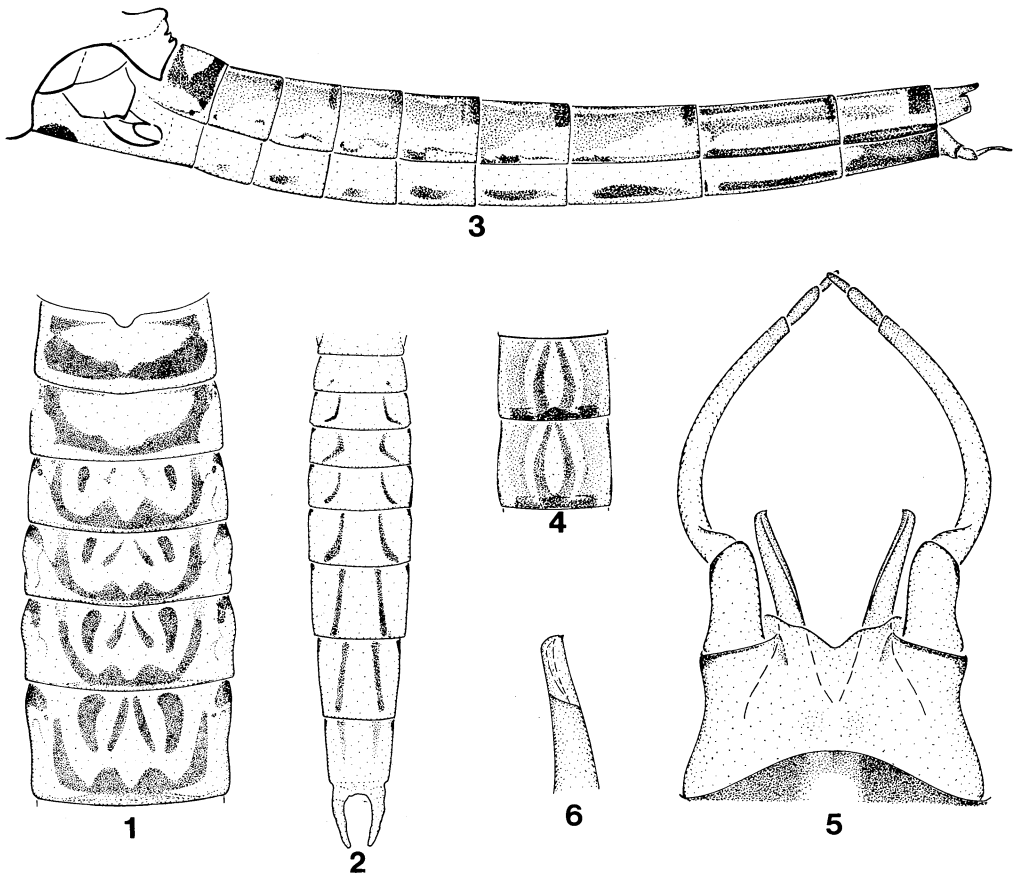


Fig. 1-6. 1-2, *Ephemera nathani*: 1, dorsal abdominal color pattern (terga 1-6); 2, ventral abdominal color pattern. 3-6, *Ephemera distincta*: 3, lateral view of abdominal color pattern; 4, dorsal abdominal color pattern (terga 5-6); 5, ventral view of ♂ genitalia; 6, detail of penis lobe, dorsal.

of segments 1 and 2; distal end of segment 2 and segments 3 and 4 darker. Caudal filaments yellowish, marked with reddish brown at some annulations; terminal filament lighter.

♂ *subimago*. Unknown.

♀ *imago and subimago*. Unknown.

Nymph. Unknown.

Holotype ♂ imago, INDIA: S India, Anamalai Hills, Cinchona, 1070 m, V.1967, P.S. Nathan (BPBM 12,574). Paratype ♂ imago, same data as holotype. Holotype deposited in Bishop Museum; paratype deposited in Florida A&M University.

Remarks. *E. distincta* can be separated from all other known *Ephemera* by the presence of 2 ventral black maculae, 1 on the mesosternum and 1 on the metasternum.

Etymology. *Distincta*, Latin, adjective, named for the 2 distinctive black maculae on the venter.

***Ephemera nathani* Hubbard, new species**

Fig. 1-2

♂ *imago*. Unknown.

♂ *subimago*. Length: body, 13.25–17.0 mm; fore wings, 12.0–15.5 mm; hind wings, 5.0–5.5 mm. Eyes black. Head dark brown. *Thorax*: pronotum yellowish with broad transparent longitudinal median stripe bordered by pair of dark brown stripes; mesonotum yellowish with brown on each side in area between outer parapsidal furrows and notal furrows, continuing onto lateral scutellar humps; metanotum yellowish, lightly washed with brown marks; sternum yellowish; pleura yellowish, lightly marked with brown. *Legs*: fore legs with coxae, trochanters, and femora yellowish, remainder of legs washed with dark brown; middle and hind legs pale yellowish, tarsi washed with dark brown. *Wings*: membrane translucent; longitudinal veins yellowish to cream-colored; crossveins brown; crossveins in pterostigmal area of fore wings slightly anastomosed. *Abdomen* (Fig. 1-2): dorsum (Fig. 1) yellowish, terga VII–IX slightly darker; terga I–IX with brown marks at anterolateral corners; terga I–VII with pair of lateral brown marks curving inward posteriorly and joining, forming U-shaped mark, these marks fading to indistinct brown areas on VIII and IX; terga III–IX with 2 pairs of longitudinal brown marks; tergum X with 1 pair of brown longitudinal marks; light brown transverse mark at posterior end of each tergum; venter (Fig. 2) yellowish, sterna II–IX or III–IX with pair of brown longitudinal marks, broken on II if present, curved on III–VI, subparallel on VII–IX. *Genitalia*: forceps translucent yellowish, washed with brown. Caudal filaments translucent yellowish, marked with dark brown at annulations.

♀ *imago*. Unknown.

♀ *subimago*. Length: body, 19.0–22.5 mm; fore wings, 18.5–21.0 mm; hind wings, 6.0–7.5 mm. Coloration and markings as in ♂ subimago except terga VII–IX not darker, concolorous with other terga.

Nymph. Unknown.

Holotype ♂ subimago, INDIA, S India, Anamalai Hills, Cinchona, 1070 m, IV.1968, P.S. Nathan (BPBM 12,575); 4♂ subimaginal, 3♀ subimaginal paratypes, same data as holotype. 3♂ subimaginal, 3♀ subimaginal paratypes, same data except IV.1967. Holotype, and 4♂ and 6♀ paratypes are deposited in the Bishop Museum; 1♂ and 1♀ paratypes each in Florida A&M University, the University of Utah, and the Zoological Survey of India.

Remarks. *E. nathani* can be distinguished from all other known species of *Ephemera* by the distinctive dorsal abdominal color pattern (Fig. 1).

Etymology. Named for the collector, P. S. Nathan.

DISCUSSION

Phylogenetic relationships within the genus *Ephemera* are not well enough understood to support the postulation of a reasonable hypothesis concerning the most closely related described species to *E. distincta* and *E. nathani*. I am confident, however, that the characters discussed under the remarks sections above will allow the new species to be distinguished from all other described *Ephemera* in the adult stage.

Acknowledgments. The research reported here was supported by a research program (FLAX 79009) of CSRS, USDA, at Florida A&M University. I thank Janice G. Peters for preparation of the illustrations. William L. Peters provided helpful criticism of the manuscript.

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