

**SUBSPECIES OF THE TRANSATLANTIC SPECIES,
BAETIS MACANI (EPHEMEROPTERA: BAETIDAE)¹**

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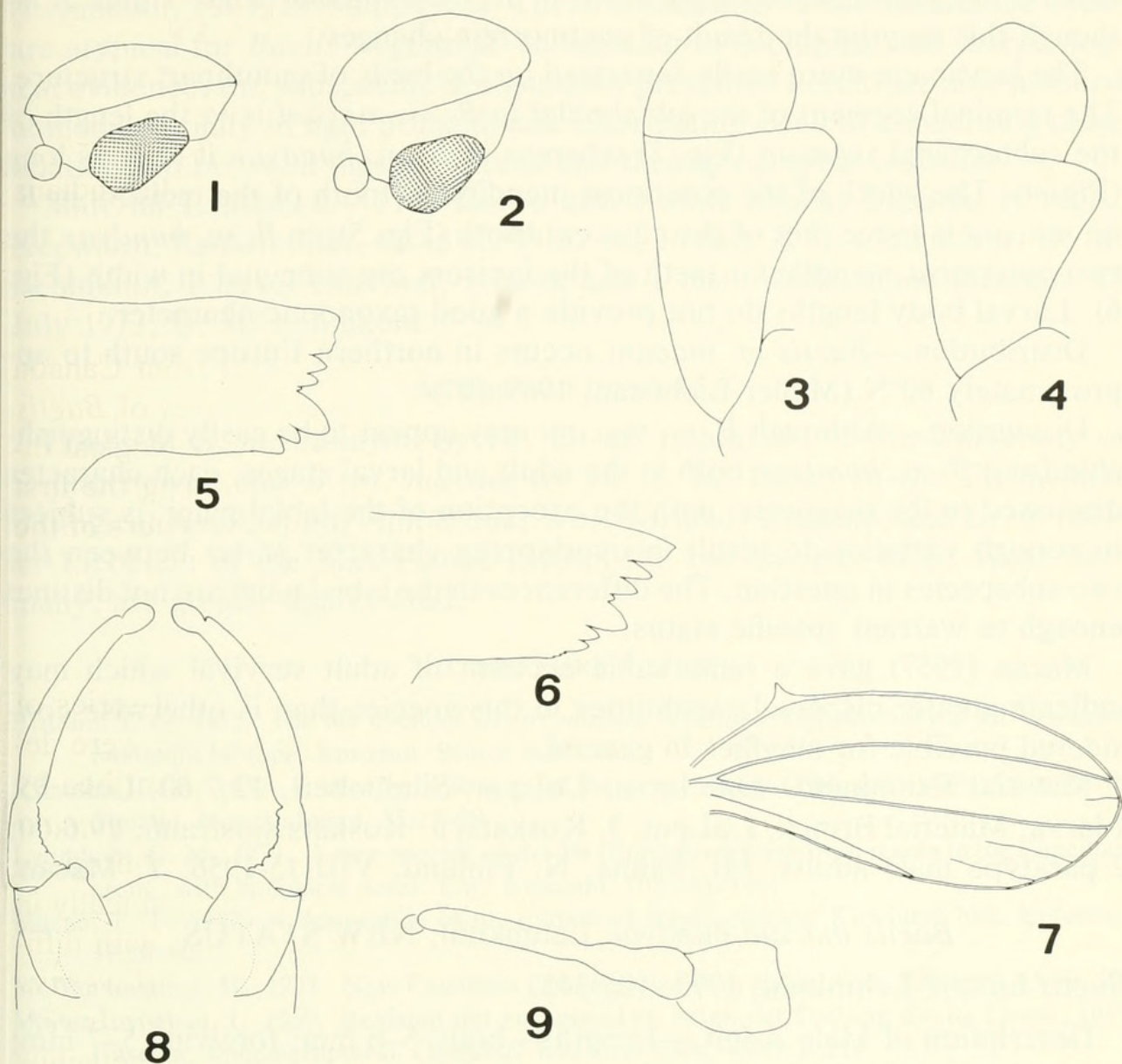
Abstract.—Based on an examination of adults and larvae from Canada and Europe, *Baetis bundyae* Lehmkuhl is placed as a subspecies of *Baetis macani* Kimmins: *Baetis macani bundyae* (new status). Morphological diagnosis and variation of both subspecies are discussed, including the first description of reared adults of *B. m. bundyae*. Ecological characters of the two subspecies appear to support the revised classification.

Baetis macani Kimmins was originally described from a small series of reared specimens collected from a lake in North Finland. Adults were described by Kimmins (1957), and the larvae were subsequently described by Macan (1957). On the basis of morphologically similar males, *B. macani* has appeared to be most closely related to a more southern European species, *B. vernus* Curtis. Both species have been studied taxonomically in detail (Müller-Liebenau, 1969), and the adults may be separated with difficulty by the shape of the turbinate eyes. The larvae, however, of *B. vernus* and *B. macani* differ significantly both in structure and habitat. *Baetis vernus* larvae live exclusively in lotic waters, the typical habitat of the genus *Baetis*, whereas *B. macani* is frequently found in still water. Thus, *B. vernus* and *B. macani* are considered distinct.

Lehmkuhl (1973) described *B. bundyae* from a series of larvae collected at the edges of tundra ponds in northern central Canada. *Baetis bundyae* has appeared to be quite similar to *B. macani*, being distinguishable only by the shape of the labial palpi and body length (Brittain, 1975). Adults from Canada were recently reared by Lehmkuhl and are herein described for the first time.

Because of fundamental morphological and ecological similarities and yet because of distinct geographic segregation and some slight morphological differences, we designate the European and North American populations respectively as the subspecies *B. macani macani* and *B. macani bundyae*,
NEW STATUS.

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Figs. 1-2. Lateral view of male adult eyes. 1, *Baetis m. macani*. 2, *B. m. bundyae*. Figs. 3-4. Labial palpi. 3, *B. m. macani*. 4, *B. m. bundyae*. Figs. 5-6. Left mandibular incisors. 5, *B. m. macani*. 6, *B. m. bundyae*. Figs. 7-9. *B. m. bundyae*, male. 7, Hindwing. 8, Ventral view of forceps. 9, Lateral view of forceps, dorsal side up.

Baetis macani macani Kimmins

Baetis macani Kimmins, 1957. 37:27; Macan, 1957. 37:58; Müller-Liebenau, 1969. 48/49:112.

Diagnosis.—No adult characters have been found which consistently distinguish the nominate subspecies from *Baetis macani bundyae*. The following two characters show differences in most individuals: *B. m. macani* is slightly larger, body length is usually between 5–7.5 mm, forewing length is between 6–8 mm; in *B. m. bundyae* body length is usually between 5–6 mm and forewing length is between 5–7 mm; the turbinate eyes of *B. m.*

macani are less elevated than those of *B. m. bundyae* (Figs. 1 and 2) although this may be the result of postmortem changes.

The larvae are more easily separated on the basis of mouthpart structure. The terminal segment of the labial palpi in *B. m. macani* is $\frac{1}{2}$ the length of the subterminal segment (Fig. 3) whereas in *B. m. bundyae* it is $\frac{2}{3}$ as long (Fig. 4). The width of the outermost mandibular tooth of the incisors in *B. m. macani* is twice that of the adjacent tooth (Fig. 5); in *B. m. bundyae* the two outermost mandibular teeth of the incisors are subequal in width (Fig. 6). Larval body lengths do not provide a good taxonomic character.

Distribution.—*Baetis m. macani* occurs in northern Europe south to approximately 60°N (Müller-Liebenau, 1969:187).

Discussion.—Although *B. m. macani* may appear to be easily distinguishable from *B. m. bundyae* both in the adult and larval stages, each character discussed in the diagnosis, with the exception of the labial palpi, is subject to enough variation to result in overlapping character states between the two subspecies in question. The differences in the labial palpi are not distinct enough to warrant specific status.

Macan (1957) gave a remarkable account of adult survival which may indicate greater dispersal capabilities in this species than is otherwise considered possible for mayflies in general.

Material Examined.—One larva, LuLpm. Siluluoberl, 12.7.60, Lok. 55; 1 larva, Material Brinck, LuLpm. 3. Koskatsj u. Koskats sjostrand, 29.6.60; 2 paratype male adults, Mt. Sanna, N. Finland, VIII-15-1956. T. Macan.

Baetis macani bundyae Lehmkuhl, NEW STATUS

Baetis bundyi Lehmkuhl, 1973. 105:343.

Description of Male Adult.—Lengths—body 5–6 mm; forewing 5–7 mm; cerci 11 mm. Head, thorax and coxae dark brown; turbinate eyes paler, grey to yellow brown, medium-large in size (see McDunnough, 1923:40). Legs brown, paler than thorax. Wings hyaline except for translucent costal and subcostal cells of forewings, veins pale; hindwings with 3 longitudinal veins and marginal intercalaries (Fig. 7). Abdomen light brown, segments 2–6 translucent, segments 7–10 opaque, segment 10 often darker brown; sterna same color as terga; abdominal tracheation sometimes pigmented black; forceps (Figs. 8 and 9) with basal segment brown, apical segments paler, constriction between segment 1 and 2 of forceps often weak, most distinct dorsally from lateral perspective (Fig. 9). Cerci pale with brown articulations.

Distribution.—*Baetis m. bundyae* has been collected only in the tundra of central Canada (N.W.T.).

Discussion.—*Baetis m. bundyae* and *B. m. macani* regularly occur in extremely cold lentic conditions and both overwinter strictly as eggs

(Lehmkuhl, 1973; Brittain, 1975). These similarities in habitat and life cycle are atypical for *Baetis* in general. In addition to ecological and morphological evidence, the subspecific designations presented herein are also justified nomenclatorially in light of maximum information content concerning close relationship between these two taxa and their geographic isolation.

Material Examined.—Five larvae and 3 male adults, Canada, N.W.T., Keewatin, Rankin Inlet, 62.45 N, 94.27 W, 26 July 1973, Char River. D. M. Lehmkuhl; 1 larval exuvium, 1 larva and 1 male adult, same location, 28 July 1973, D. M. Lehmkuhl.

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