

DESCRIPTION OF ADULTS OF *BAETIS NOTOS* (EPHEMEROPTERA: BAETIDAE)¹

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ABSTRACT: Male and female adults of *Baetis notos* are described for the first time. Males of this southwestern species are distinguished from other described species of the *B. fuscatus* group by the creamy white coloration tinged with yellow. Biological notes for this species are given.

Baetis notos Allen and Murvosh (1987) was described from a single larva from Catron Co., New Mexico. Morihara and McCafferty (1979) had previously described this species as *Baetis* sp. C from a series of larvae from Arizona and New Mexico. *Baetis notos* has been included in the *Baetis fuscatus* group. The larvae in this group are characterized by short, broad labial palpi, reduced paraglossae, and similar pronotal markings (Morihara and McCafferty 1979). Other Nearctic species currently placed in this group are *B. caurinus* Edmunds and Allen, *B. flavistriga* McDunnough, *B. intercalaris* McDunnough, *B. ochris* Burks, and *B. rusticans* McDunnough (Morihara and McCafferty 1979). Recently, Waltz (1995) concluded that *B. ochris* was a synonym of *B. flavistriga*. *Baetis flavistriga* and *B. intercalaris* are known from both adults and larvae. *Baetis notos* is known from larvae only, and the remaining two species in this group are known only from adults.

During July 1993, a series of male adults tentatively determined as *B. notos* was collected from a stream in the Gila National Forest, New Mexico. Subsequent collecting and rearing from this site during July 1994 confirmed the association. The following descriptions are based on specimens preserved in alcohol. Comments on the coloration of live specimens follow these descriptions.

Baetis notos Allen and Murvosh

Adult Male (in alcohol).—Length of body 5.0-5.5 mm, forewings 4.5-5.0 mm, hindwings 1.0 mm, caudal filaments 13-14 mm. Head ivory with small orange mark below each lateral ocellus between compound eye and scape; compound eyes purple-black; stalk of turbinate eyes ivory, light orange dorsally; ocelli with purple-black ring around base; antennae light orange brown. Thorax ivory dorsally, white ventrally. Coxae and trochanters white; femora, tibiae and tarsi ivory with narrow brown shading at tarsal articulations; claws smoky brown. Forewings hyaline; longitudinal veins and crossveins light brown; intercalaries well-developed and light brown; stigmatic area cloudy with much anastomosing. Hindwing with well-developed costal projection and three longitudinal veins (Fig. 1), sometimes with an intercalary between veins 2 and 3. Abdominal terga 2-6 translucent, 7-10 opaque white, terga 1-9 tinged with light yellow. Abdominal segments 1-7 with purplish tracheation laterally. Sterna 2-6 translucent, with slight yellow tinge, 7-9 opaque

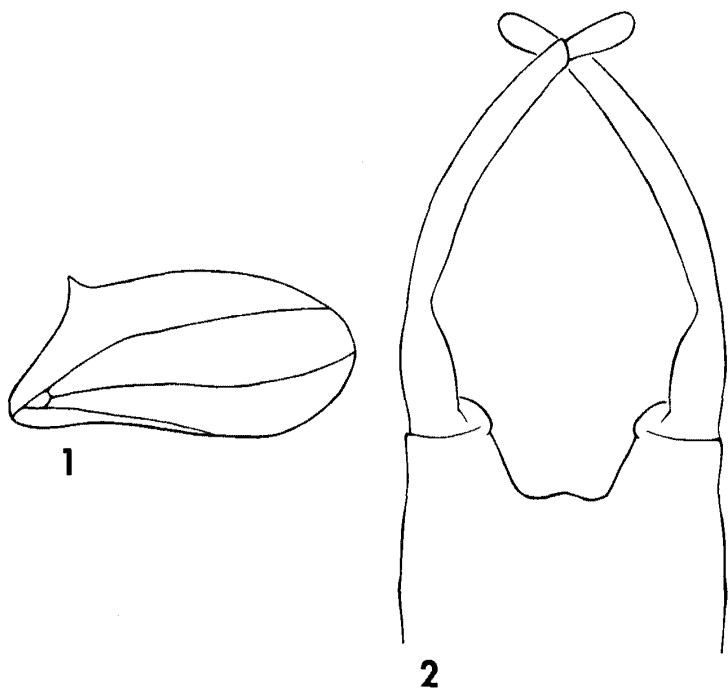
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white. Genital forceps white and of the *intercalaris* type with a small projection on the mesoapical edge of the first segment and a strong constriction near the basal third of second segment (Fig. 2). Caudal filaments white, light brown at articulations.

Adult female (in alcohol).—Length of body 6.0-6.5 mm, forewings 6.0-6.5 mm, hindwings 1.0-1.1 mm, caudal filaments 13-14 mm. Head light brown with orange tinge; compound eyes purple-black; ocelli with purple-black ring around base; antennal scapes and pedicels light brown, flagella smoky. Thorax light brown dorsally, ivory ventrally. Femora and tibiae light brown; tarsi smoky brown. Forewings hyaline; veins and intercalaries medium brown. Hindwings as in male. Abdominal terga light brown. Tracheation well-defined laterally on segments 2-8 and extending dorsally on segments 2-6. Abdominal sterna 1-6 translucent, appearing light yellow from eggs, 7-9 opaque white. Caudal filaments as in male.

Material examined.—*B. notos*: Catron Co., NM, Taylor Creek, below Wall Lake, 21 July 1993, R. Durfee, 29 males; Taylor Creek, below Wall Lake, 24 July 1994, B. Kondratieff and R. Durfee, 2 males, 6 females (reared) and 28 males.



Figures 1 and 2. *Baetis notos*, male adult. 1. hindwing, 2. male genitalia, ventral view.

DISCUSSION

Although the larvae of *B. notos* possess distinctive, dark markings on the thoracic nota and abdominal terga (Moriyama and McCafferty 1979, Allen and Murvosh 1987), the adults lack any prominent markings. Live male adults are strikingly creamy white in color and tinged with bright lemon yellow on the face, antennae, dorsal surface of the compound eyes, femora, and abdomen. The only dark markings, except for the abdominal tracheation, are the claws, the articulations of the caudal filaments, and the narrow light orange-brown transverse bands on the posterior margins of abdominal terga 1-9 (not apparent in alcohol preserved specimens). This light coloration makes them highly visible during nuptial flights at dusk, and easily separable from other sympatric adult baetids. Live females are darker than the males, with an overall light brown coloration. They are also tinged with lemon yellow on the face, antennae, legs, and abdomen.

The hindwings of both males and females (Fig. 1) have a well developed costal projection and three longitudinal veins. Approximately 20% of the specimens examined possessed an intercalary between veins 2 and 3. Additionally, one male specimen possessed a hindwing with a forked second longitudinal vein. Variations in hindwing venation of *Baetis* spp. have been discussed by Durfee and Kondratieff (1993). Male genital forceps are of the *intercalaris* type with a small projection on the mesoapical edge of the first segment and a strong constriction near the basal third of second segment (Fig. 2).

Adult males of *B. notos* are very similar to the description of *B. caurinus* Edmunds and Allen (1957), a species reported only from Lincoln Co., Oregon. The adults of this species can be separated from *B. notos* by their darker coloration and markings. However, the discovery of the larvae of *B. caurinus* will be necessary to resolve any relationships.

Baetis notos is known from Arizona, Colorado (McCafferty *et al.* 1993), New Mexico, Texas (McCafferty and Davis 1992), Utah (North Fork Virgin River, Zion National Park, 16 July 1988, C. P. Gillette Museum of Arthropod Diversity, Colorado State University), and Veracruz, Mexico (Lugo-Ortiz and McCafferty 1994).

Males were observed swarming in small groups at dusk very near the waters' surface in riffle areas. Collecting these specimens required skimming the surface of the water with an aerial net. No female adults were observed or collected in the field; however, the majority of *B. notos* larvae collected on 24 July 1994 were female. This may indicate that most of the males had emerged earlier. In addition, a series of mature larvae were collected from this site on 28 April 1994 suggesting at least two generations per year.

Other mayflies that were found along with *B. notos* in Taylor Creek and surrounding streams included: *Acentrella insignificans* (McDunnough), *B. tricaudatus* Dodds, *Camelobaetidius* spp., *Fallceon quilleri* Dodds, *Leptohyphes apache* Allen, *Tricorythodes minutus* Traver, *Epeorus margarita* Edmunds and Allen, *Epeorus longimanus* (Eaton), *Nixe criddlei* (McDunnough), *Isonychia intermedia* (Eaton), *Siphonurus occidentalis* Eaton, *Choroterpes inornata* Eaton, *Paraleptophlebia* sp., *Thraulodes arizonicus* McDunnough, and *Traverella castanea* Kilgore and Allen.

Taylor Creek also supports high densities of such interesting species of caddisflies as *Hydropsyche californica* Banks, *Cheumatopsyche* cf. *gyra* Ross, *Ochrotrichia* cf. *argentea* Flint and Blickle and *Chimarra utahensis* Ross.

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