DESCRIPTION OF THE ADULT MALE OF
*ALLONARCYS COMSTOCKI* (SMITH)
(PLECOPTERA: PTERONARCIDAE)\(^1,2\)

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**ABSTRACT:** The adult male of *Allonarcys comstocki* (Smith) is described and figured for the first time. The adult specimen was reared from a last instar nymph collected in Seneca Creek, Pendleton County, West Virginia. Characters serving to distinguish the male of this species from that of closely related *A. proteus* are discussed. A key to all the described males of the genus *Allonarcys* is presented.

**DESCRIPTORS:** Plecoptera; Pteronarcidae; *Allonarcys comstocki* (Smith); adult male described.

*Allonarcys comstocki* was described from the adult female by Smith in 1917 and the nymph of this species was identified by Ricker in 1952. The apparently elusive male imago has remained undescribed for nearly sixty years, even though *A. comstocki* has a range across northeastern North America (Ricker, 1952; Nelson and Hanson, 1971; Zwick, 1973; Tarter, et al, 1975). Hence, it is indeed fortunate that an adult male specimen of this species reared from a last instar nymph (fig. 1) at the biological sciences laboratories of Marshall University has become available for examination. The last instar nymph was collected on 21 February 1976 from Seneca Creek approximately one-half mile above the mouth of White’s Run (altitude: 658.2m), Pendleton County, West Virginia. The nymph was then transferred to a small container of aged tap water and placed within an incubator at a temperature of 12.8\(^\circ\)C with a twelve hour photoperiod. The adult male emerged sometime on the dates of 13 – 15 March 1976. The nymphal exuviae and adult specimen are deposited in the C. H. Nelson collection. Unless otherwise indicated, the morphological terms used in this present work are those introduced by Nelson and Hanson (1971) in their study of the family Pteronarcidae.

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Male imago:

Length to tip of abdomen 27mm, to tip of wings 33mm. General body color, in alcohol, dark brown with large yellow-whitish colored membranous areas on each of the three thoracic sterna and orange-yellowish ecdysial cleavage line mesally dividing pronotum.

Mesal anterior half of ninth tergite elevated to form an anteriorly projecting process with broadly rounded frontal margin (figs. 2, 3). Mesal posterior half of ninth tergite covered with many peg-like setae. Ninth sternite characterized by posteriorly produced rounded subgenital plate (fig. 3). In ventral view, ninth mesal sternal area elevated to form a longitudinal “plateau” (fig. 4, pl) narrowing posteriorly from its greatest width anteriorly. Median hemitergal lobes (fig. 2, mhl) of tenth tergite narrowly rounded at apical margins and covered apically with peg-like setae for slightly over half their length. Posterior hemitergal lobes (fig. 2, phl) are narrow, difficult to discern, and covered with long, thin setae for most of their length. Inner part (figs. 5, 6, ip) of supra-anal process approximately 3/4 length of dorsal section (fig. 5, ds) of free part. Trough-shaped process (fig. 5, 6, tp) of dorsal section of supra-anal process well demarked, projecting anteriorly from frontal sclerotized surface. Subanal lobes lightly sclerotized and in lateral view somewhat boot-shaped in appearance (fig. 2). Cerci slightly more than 1/2 length of abdomen; approximately 27 segments.

Nelson and Hanson (1971) relying upon female genitalic structures, noted that *A. comstocki* was very likely the sister species of *A. proteus* (Newman). Further support for this contention is obtained from the observation that the male genitalic structures of *A. comstocki* very closely resemble those of *A. proteus*. Indeed, owing to this close structural similarity males of *A. comstocki* could be easily confused with those of *A. proteus* and this may in part explain the past difficulty encountered by students of Plecoptera in finding males of the former species. Nonetheless, the male of *A. comstocki* exhibits the following features by which it can be readily distinguished from that of *A. proteus*: (1) median process of ninth tergite is less pronounced with frontal margin entire; (2) median hemitergal lobes are narrowly rounded at their apical margins; (3) inner part of supra-anal process in less elongate only 3/4 length of dorsal section and (4) trough-shaped process is somewhat larger and more pronounced.

In order to further facilitate recognition of the adult male of *A. comstocki* a key to the described males of the species within *Allonarcys* is presented.

**Key to the Described Males of *Allonarcys***

1. Apical spatula present on dorsal section of supra-anal process; ninth tergite mesally divided by longitudinal membranous band (East Asian) ........................................2
Apical spatula absent from dorsal section of supra-anal process; ninth tergite entirely sclerotized (Eastern North America) .................................................. 3

2. Spatula long, approximately 1/2 length of dorsal section of supra-anal process; posterior border of median hemitergal lobes nearly straight ................................ A. reticulata (Burmeister)

Spatula short, approximately 1/4 length of dorsal section of supra-anal process; posterior border of median hemitergal lobes arcuate .... A. sachalina (Kalpalek)

3. Mesal anterior half of ninth tergite lacking anteriorly projecting process; inner part of supra-anal process short, approximately 1/2 length of dorsal section ............. 4

Mesal anterior half of ninth tergite elevated forming anteriorly projecting process; inner part of supra-anal process long, greater than 2/3 length of dorsal section ... 5

4. Protuberances present on trough-shaped process of supra-anal process; cowl with fork-like structure present; setae on anterior lateral "arms" of cowl distinct and numerous ................................ A. biloba (Newman)

Protuberances absent from trough-shaped process of supra-anal process; cowl lacking fork-like structure; setae on anterior lateral "arms" of cowl indistinct and sparse ................................ A. scotti (Ricker)

5. Frontal border of ninth tergal process emarginate; apical margin of median hemitergal lobes broadly rounded; inner part of supra-anal process approximately equal in length to dorsal section ................................ A. proteus (Newman)

Frontal border of ninth tergal process entire; apical margin of median hemitergal lobes narrowly rounded; inner part of supra-annal process nearly 3/4 length of dorsal section ................. A. comstocki (Smith)

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LITERATURE CITED


Figs. 1-6. *Allonarcys comstocki* (Smith). Fig. 1. Last instar nymph, dorsal view. Fig. 2. Male terminalia, dorsal view (mhl = median hemitergal lobes, ph1 = posterior hemitergal lobes). Fig. 3. Male terminalia, lateral view. Fig. 4. Male terminalia, ventral view (pl = plateau). Fig. 5. Supra-anal process, lateral view (ip = inner part, vs = ventral section, ds = dorsal section, tp = trough-shaped process). Fig. 6. Supra-anal process, anterior view.