

A New Record of Burrowing Mayfly, *Anthopotamus neglectus neglectus* (Traver, 1935) (Ephemeroptera: Potamanthidae), from Ohio, USA

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Abstract: A new state record for a mayfly (Ephemeroptera) was collected on the Olentangy River, Delaware County, Ohio, USA. *Anthopotamus neglectus* Traver (1935) were collected as nymphs and subsequently reared to adults.

Keywords: Olentangy River, Delaware County, Ohio

Introduction

The neglected hackle-gilled burrowing mayfly, or the golden (or yellow) drake to fly fishers, *Anthopotamus neglectus* was first described by Traver (1935) as *Potomanthus neglectus*. Bae and McCafferty (1991) reorganized the family Potamanthidae and placed the taxon in a new genus, *Anthopotamus* McCafferty and Bae (1990). They further divided the species into two subspecies, *A. neglectus neglectus* and *A. neglectus disjunctus*. The geographic range of the former species was originally given as a small circle centered in New York. The latter species was centered in the south-central United States. More recently, *A. neglectus neglectus* has been reported in eastern North America including Ontario, Alabama, Arkansas, Maryland, Missouri, Mississippi, New York, Oklahoma, Tennessee, Virginia, and West Virginia (Randolph, 2002). The online database NatureServe Explorer (2019) lists the range of *A. neglectus neglectus* as previously stated, with the addition of Georgia and Pennsylvania (but it includes the caveat “Distribution data for U.S. states and Canadian provinces is known to be incomplete or has not been reviewed for this taxon”). It is notable that the Upper Midwest states, including Ohio, are not included in the published geographic distribution. The published geographic distribution of *Anthopotamus neglectus disjunctus* includes Oklahoma, Arkansas, Mississippi, and Tennessee (Randolph, 2002).

Methods

Anthopotamus neglectus nymphs were collected on 27-VII-2019 and 05-VIII-2019 from the Olentangy River, Delaware Co., Ohio, USA at Highbanks Metro Park (40.149145, -83.042546). At the sampling site, the stream bed is sand and cobble. The nymphs were most prevalent in the rapids. Water temperature was 20.6°C (69°F) at the time of collections.

Sampling Methods. A standard one m² kick net was used to collect nymphs in riffles from the above sites. Mature larvae were placed in a bucket of stream water oxygenated with a battery-operated bubbler. Mature larvae were reared in an aquarium until emersion. Subimagoes emerged over a two-week period beginning 08-VIII-2019; imagoes (male and female) emerged a day later than the subimagoes. The imagoes lived only 2 days. Specimens were deposited at The Ohio State University Museum of Biological Diversity and Mayfly Central, Purdue University.

Results and Discussion

Our collections of *A. neglectus* represent the first record of this mayfly species from Ohio. Nymphs were identified to genus with the keys and description of Merritt, Cummins, and Berg (2008) and to species with the description and keys of Bae and McCafferty (1991). The identification was confirmed by Luke Jacobus (Indiana University–Purdue University [IUPUC], Columbus, IN).

Nymphs. *Anthopotamus neglectus* nymphs are recognized as burrowing mayflies by the forward-thrusting upturned tusks (mandibles). The abdominal gills are oriented laterally, which distinguishes them as the family Potamanthidae (see Fig. 1). The

particular shape of the tusks (i.e., narrowing abruptly and rather straight; Fig. 2a); the elongate narrow spine on the apical, inner margin of the foretibiae (Fig. 2b); and the extensively marked tergal segments (Fig. 1), identify it as *A. neglectus*.

For the nymphs, the division of the species into subspecies is partly on the basis of regional geographic location. *A. neglectus neglectus* is found in the northeastern U.S.; *A. neglectus disjunctus* is found further south (Tennessee, Arkansas, Georgia, Mississippi).



Figure 1. *Anthopotamus neglectus* nymph, dorsal view.

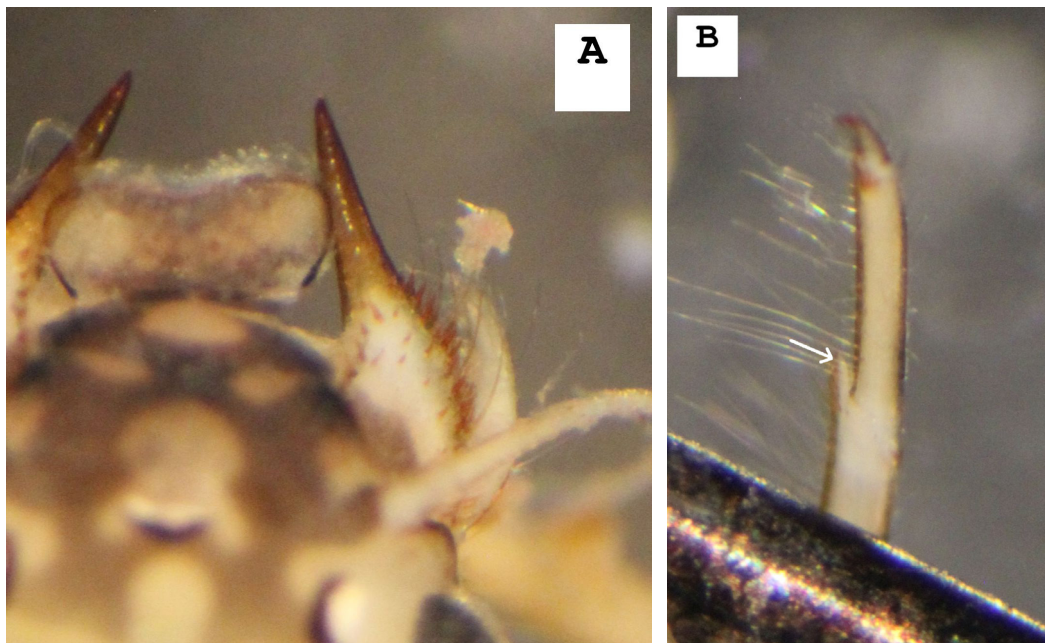


Figure 2. A) Tusk or mandible of *A. neglectus*, dorsal view; B) foretibia showing apical spine on inner margin (arrow).

Adults. A more exact description of the subspecies is given for the adults (Fig 3). In general terms, the body of the adult is pale yellow with three tails; the middle tail (terminal filament) is shorter than the outer tails (cerci). The wings are transparent, with clearly marked wing veins. The subimago (dun) and imago (spinner) are similar in the coloration and clarity of the wings. The MP1 vein of the hindwing of *A. neglectus neglectus* is symmetrically forked with the MP2 vein (Fig. 4). The crossveins of both the fore- and hindwing are strongly infuscated (darkened with a brown tinge). The other subspecies, *A. neglectus disjunctus*, has the MP1 of the hindwing more commonly connected with the CuA vein, forming an MP-cell (Bae and McCafferty, 1991).



Figure 3. *Anthopotamus neglectus* female.

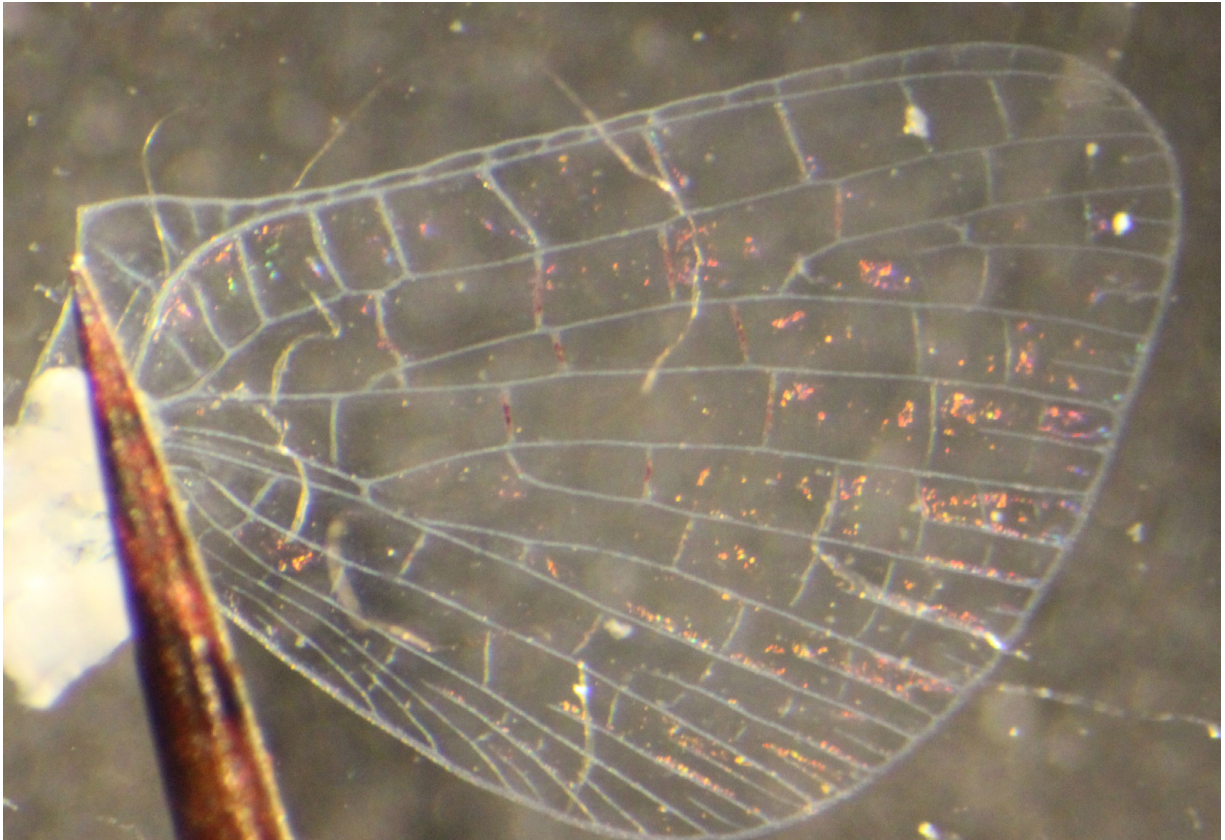


Figure 4. Hindwing of male *Anthopotamus neglectus neglectus*.

The collection of *A. neglectus neglectus* in Ohio is a new range extension for the taxon. A possible reason that it has heretofore not been reported in Ohio is because the Ohio Environmental Protection Agency (OEPA) and other groups involved in monitoring water quality do not carry the taxonomy beyond the level of genus (OEPA Macroinvertebrate Taxa List, 2019). The finding of *A. neglectus* in the Olentangy River, a habitat that is not unusual for Ohio but which has a high abundance of aquatic insects, including stoneflies (DeWalt, et al., 2012), might mean that the taxon has already been collected but not recognized by OEPA or other groups involved in water quality monitoring. Fly fishers report seeing the “yellow drake” in midsummer (Brian Flechsig, pers. comm.).

The family Potamanthidae consists of one genus in Ohio, *Anthopotamus*. There are four species in this genus in North America (Randolph, 2002). *Anthopotamus distinctus* and *A. myops* were previously reported in Ohio by Randolph and McCafferty (1998). *Anthopotamus verticis* has recently been recovered from a collection dated 1936 from Lake County (Bolton et al., 2019). The finding of *A. neglectus* completes the list of taxa for Ohio.

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