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DELAWARE LEECHES (ANNELIDA: HIRUDINEA: GLOSSIPHONIIDAE): NEW STATE RECORDS AND NEW MOLLUSCAN HOST RECORD FOR *PLACOBDELLA MONTIFERA* MOORE

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Abstract.—Four glossiphoniid leeches are reported new to Delawar *Batracobdella phalera* (Graf), *Helobdella stagnalis* (Linnaeus), *Placobdel montifera* Moore and *P. parasitica* (Say). A new invertebrate host *Anodon cataracta* Say (Mollusca: Bivalvia: Unionidae) is reported for *P. montifer* Ecological notes on the habitat are included.

Introduction

Ecological and distributional data on many species of freshwater leech are seriously lacking for many states. As indicated by Sawyer (1974), mo of our knowledge of the ecology of North American leeches is derive from data obtained from European species similar to those of Nort America.

Deep Creek near Nanticoke Acres, east of U.S. Highway 13 and north Delaware Highway 20, was the sampling area. The creek, a maj tributary to the Nanticoke River, flows from Redden State Forest Seaford in Sussex County and drains a semicircular shaped watershed approximately 41,675 acres (Delaware Department of Natural Resourc and Environmental Control, 1976).

Although no water quality data were available for the exact collectin site, Physiochemical parameters measured at sites upstream and dow stream of the Nanticoke River-Deep Creek confluence (Delaware D partment of Natural Resources and Environmental Control, 1976) cha acterize that segment as tidal and neutral to slightly acidic (pH 7.2–6.5 with a healthy range of dissolved oxygen (6–12 ppm), and a relativel wide range of moderate to high concentrations of nitrate nitrogen (0.4 3.6 ppm) and low to moderate concentrations of total phosphates (0.1 1.3 ppm).

Results and Discussion

While clamming in a sandy bottom creek during August 1976, 48 leech representing four species of glossiphoniids were collected by two of m colleagues. The collection included 7 specimens of *Batracobdella phaler* (Graf); 35, *Helobdella stagnalis* (Linnaeus); 5, *Placobdella montifer* Moore; 1, *P. parasitica* (Say). These four species are reported new to Del ware.

The morphology of the specimens was consistent with that described by Sawyer (1972) for those species. The conspicuous presence of three dorsal keels or ridges on each specimen of *P. montifera* eliminated the possibility of confusing that species with the similar, newly described *P. nuchalis* (Sawyer and Shelley, 1976), which lacks the three ridges on the dorsum. No individuals carried eggs or young. All leeches, except three specimens of *P. montifera*, were collected free-living and attached to the undersurfaces of submerged tree branches and sticks or to the exterior of empty clam shells. The three *P. montifera* were collected from the mantle cavities of two *Anodonta cataracta* Say (Mollusca: Bivalvia: Unionidae). The leeches in the clams occurred with aspidogastrid trematodes (Platyhelminthes: Trematoda: Aspidogastridae) and water mites (Acarina: Trombidiformes: Unionicolidae). A similar co-occurrence was previously reported by Curry and Vidrine (1976). This paper is the first report of *A. cataracta* serving as a host for *P. montifera.* Eight other specified unionid clam hosts are reported for *P. montifera* by Curry and Vidrine (1976). A review of other host species for *P. montifera* includes ten species of fishes and one turtle (Curry and Vidrine, 1976). The term "host" is used here for lack of a more accurate term describing this seemingly haphazard relationship, which may actually be one of "clandestine shelter" as suggested by Fuller (1974).

In summary, this investigation reports four species of freshwater leeches new to Delaware: *Batracobdella phalera, Helobdella stagnalis, Placobdella montifera,* and *P. parasitica.* The investigation also extends the ranges of those species by several hundred miles, adds a minimum amount of information for a better understanding of habitat characterization of the four species and reports a new invertebrate host, *Anodonta cataracta,* for *P. montifera.*

Voucher specimens for *Anodonta cataracta* were identified by M. Vidrine and D. Bereza and are deposited in the Academy of Natural Sciences of Philadelphia (Department of Malacology). Leeches were identified by the author and are in her private collection in Metairie, Louisiana.

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