

Distribution of *Placobdella ornata* (Verrill, 1872) (Hirudinida: Glossiphoniidae)

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ABSTRACT

The distribution of *Placobdella ornata* (Verrill, 1872) is unclear as there has been much taxonomic confusion regarding this species. New collections and redetermination of museum specimens revealed 24 new locality records for *Placobdella ornata*, including the first reports of the species in New York and Rhode Island. *Placobdella ornata* is now known to occur in Massachusetts, Rhode Island, Connecticut, and eastern New York, USA, as well as Belgium (presumably introduced). A specimen from the syntype series of *Placobdella ornata* (Verrill, 1872) is designated as the lectotype of the species.

KEYWORDS

Placobdella ornata, *Placobdella phalera*, Hirudinida, Glossiphoniidae, New England

Introduction

There has been much confusion regarding the identification of leeches ascribed to *Placobdella ornata* (Verrill, 1872) and, thus, the distribution of the species. *P. ornata* was originally described by Verrill (1872) based on specimens collected from the West River, New Haven, New Haven County, Connecticut. After 1901, the name *P. ornata* was apparently supplanted by *P. rugosa* (Verrill, 1874), and *P. ornata* does not reappear in the scientific literature until Moore (1952). Moore (1952) resurrected the name *P. ornata* and determined all the varieties of *Clepsine ornata* designated by Verrill (1874) to be conspecific. Without considering the syntypes of *P. ornata* designated by Verrill (1872), Moore (1952) collectively placed these varieties into his concept of *P. rugosa* (Verrill, 1874) Moore, 1901, but under the name of *P. ornata*. As a result, the name *P. ornata* has been erroneously applied to an array of papillated turtle leeches throughout much of North America.

Clepsine phalera was originally described by Graf (1899) based on specimens taken from small ponds in Falmouth, Massachusetts, but no type

material was deposited. Graf (1899) suggested the common musk turtle or stinkpot turtle, *Sternotherus odoratus*, as a host of *C. phalera*. Moore (1906) transferred *C. phalera* to the genus *Placobdella* and “rather doubtfully” ascribed the name *P. phalera* as described by Graf (1899) to specimens collected from Ohio, USA, and Ontario, Canada. The key characters on which Moore (1906) based this decision were the presence of a white nuchal band and a circle of small papillae on the caudal sucker. These characters are found in several species of glossiphoniid leeches; nevertheless, the concept of *P. phalera* sensu Moore (1906) has been widely accepted as the name bearer for *P. phalera* (Meyer and Moore 1954; Sawyer 1972; Davies 1973). *P. phalera* sensu Moore (1906) was considered to be a widely distributed temporary parasite of fish throughout eastern North America, particularly abundant in the Great Lakes region (Klemm 1982, 1985, 1991; Jones and Woo 1990). The concept of *P. phalera* sensu Moore (1906) was so firmly established that Sawyer (1972) viewed the Graf (1899) report of *P. phalera* utilizing stinkpot turtles as questionable. Based on specimens collected from fishes from Florida and

Ontario, Jones and Woo (1990) redescribed *P. phalera* and designated fig. 116 from Graf (1899) as the lectotype.

After contemporary leeches collected from the type locality of West River, New Haven, Connecticut, were determined to be conspecific with *Placobdella ornata* (Verrill, 1872), Moser et al. (2012) redescribed *P. ornata* (Verrill, 1872). The similarity of *P. ornata* and *P. phalera* as described and figured by Graf (1899) led Moser et al. (2012) to conduct a morphological and molecular comparison of the two putative species. Leeches conforming to the original description of *P. phalera* by Graf (1899) collected from the type locality (Shiverick's Pond, Falmouth, Barnstable County, Massachusetts, USA) were determined to be conspecific with *P. ornata* (Verrill, 1872); thus, Moser et al. (2012) declared *P. phalera* to be a junior synonym of *P. ornata*.

Although there is a large amount of literature documenting the distribution of *Placobdella ornata* and its junior synonym *P. phalera* (Sawyer 1972; Klemm 1982, 1985, 1991), these reports are based on misidentifications resulting from taxonomic errors associated with these species and are thus considered invalid. The purpose of this study is to clarify the distribution of *P. ornata* (Verrill, 1872) sensu Moser et al. (2012).

Materials and Methods

In the course of faunistic studies on the leeches of the eastern United States, specimens determined to be conspecific with *Placobdella ornata* as described by Verrill (1872) were discovered. Voucher specimens were prepared as described by Moser et al. (2006) and deposited in the Division of Invertebrate Zoology of the Peabody Museum of Natural History, Yale University, New Haven, Connecticut (YPM IZ), or the National Museum of Natural History, Smithsonian Institution, Washington, DC (USNM). The collections of the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts (MCZ); YPM IZ; and USNM were also investigated for specimens of *P. ornata*.

Results and Discussion

Twenty-four new locality records are added for *Placobdella ornata*, including the first reports of

the species in New York and Rhode Island. All previous confirmed reports and new locality records of *P. ornata* are summarized (Table 1 and Figure 1). A large number of specimens identified as *Desserobdella phalera*, collected by Douglas G. Smith (University of Massachusetts Amherst) throughout Massachusetts and immediately surrounding areas, deposited in the MCZ were redetermined as *P. ornata*. All specimens examined were identified by comparison with the syntype specimens of *P. ornata* (YPM IZ 000256 and YPM IZ 056212) and contemporary material collected from the type locality, West River, New Haven, Connecticut (Moser et al. 2012). *P. ornata* is distinguished from other congeners by its possession of five pairs of preanal papillae, three rows of dorsal papillae (medial and two paralaral rows), and an unpigmented nuchal band, genital bar, and anal patch (Figure 2).

The syntype series of *Placobdella ornata* (Verrill, 1872) consists of two mature specimens (YPM IZ 000256 and YPM IZ 056212) and three hatchlings (YPM IZ 056213). Based on the syntype series and contemporary material collected from the type locality, Moser et al. (2012) redescribed *P. ornata* but did not designate a lectotype. YPM IZ 000256 is designated as the lectotype herein. The lectotype specimen of *P. ornata* (YPM IZ 000256) has three rows of papillae on its dorsal surface: a dorsal-medial row of papillae with a larger papillus on the neural annuli and two paramedial rows of papillae. The lectotype of *P. ornata* also has two pairs of five preanal papillae with the posterior three pairs smaller than the anterior two pairs. The other mature specimen of *P. ornata* (YPM IZ 056212) is missing a portion of its posterior end.

Placobdella ornata is now known to occur in Massachusetts, Rhode Island, Connecticut, and eastern New York, USA, with the type locality in the South Central Coast Watershed (West River, New Haven County, Connecticut). Interestingly, *P. ornata* was recently reported from the Donkmeer, a lake in the municipality of Berlare in the East Flanders province of Belgium, where it has apparently been introduced (Soors et al. 2015). Graf (1899) also reported *Clepsine phalera* (junior synonym of *P. ornata*) from Tuckahoe, New York (Westchester County), and Little Falls, New Jersey (Passaic County). Unfortunately, Graf (1899) did not deposit specimens from his New

TABLE 1. Previous reports and new locality records of *Placobdella ornata* (Verrill, 1872) (Hirudimida: Glossiphoniidae). *Abbreviations:* MCZ, Museum of Comparative Zoology, Harvard University; fkm, river kilometer; USNM, United States National Museum of Natural History, Smithsonian Institution; YPMIZ, Peabody Museum of Natural History, Yale University.

Catalog number	State	County	Locality	Date collected	Coordinates
MCZ 56366	Massachusetts	Hampshire County	Northampton, Connecticut River oxbow on Route 5	20 May 1975	42°17'42" N, 72°37'16" W
MCZ 56525 ^a	Rhode Island	Washington County	South Kingston, Worden Pond	1 Aug 1985	41°25'46" N, 71°34'24" W
MCZ 56351	Massachusetts	Hampshire County	South Hadley, Lower Duck Pond (Stony Brook), Mt. Holyoke campus	30 Jul 1974	42°15'17" N, 72°34'20" W
MCZ 56464	Massachusetts	Plymouth County	Plymouth, Town Brook, just upstream of MA 3A	2 Jul 1980	41°57'19" N, 70°39'46" W
MCZ 56420	Massachusetts	Hampden County	Holyoke, Connecticut River, Holyoke Power Dam	5 Jun 1977	42°12'42" N, 72°36'03" W
MCZ 56348	Massachusetts	Middlesex County	Medford, unnamed pond, 0.4 km (0.25 mi) west of junction of US 93 and South Border Road	18 Jul 1974	42°25'52" N, 71°06'27" W
MCZ 56589	Massachusetts	Franklin County	Sunderland, Connecticut River, fkm 178.8, east side	6 Aug 1987	42°31'44" N, 72°34'07" W
MCZ 56566	Massachusetts	Middlesex County	Pepperell, Nashua River, below dam, at covered bridge	15 May 1986	42°39'53" N, 71°34'35" W
MCZ 56384	Massachusetts	Hampshire County	Northampton, Connecticut River, Danks Pond in Oxbow	10 Jun 1976	42°17'20" N, 72°38'26" W
MCZ 56640 ^b	New York	Dutchess County	Vicinity of Barrytown, Hudson River, fkm 155	7 Aug 1996	41°59'58" N, 73°56'05" W
MCZ 56328	Massachusetts	Hampshire County	South Hadley, Bachelor Brook?, MA 116 overpass	30 May 1974	42°16'40" N, 72°33'42" W
MCZ 56337	Massachusetts	Middlesex County	Winchester, Wedge Pond, off Lake Street	22 Jul 1974	42°27'18" N, 71°08'26" W
MCZ 56342 ^a	Rhode Island	Providence County	Central Falls, Saylesville, Barney Pond	17 Jul 1974	41°53'48" N, 71°24'58" W
MCZ 56418	Massachusetts	Barnstable County	Dennis, Chase Garden Creek, 0.3 km (0.2 mi) northwest of MA 6A	21 May 1977	41°43'36" N, 70°11'58" W
MCZ 56383	Massachusetts	Hampden County	Longmeadow, Connecticut River, backwater	2 Jun 1976	42°03'10" N, 72°36'04" W
MCZ 56382	Massachusetts	Hampshire County	Hatfield, Great Pond (Old Oxbow)	7 May 1976	42°23'27" N, 72°36'22" W
MCZ 56446	Massachusetts	Hampden County	Springfield, Connecticut River, 3.2 km (2 mi) south of junction of US 5 and US 20	3 Jul 1978	42°05'28" N, 72°35'16" W
MCZ 56450	Massachusetts	Barnstable County	Gosnold, Naushon Island, West End Lake	13 Oct 1979	41°27'42" N, 70°47'39" W
MCZ 56419	Massachusetts	Barnstable County	Dennis, Quivett Creek, off MA 6A at Mud Pond	21 May 1977	41°44'33" N, 70°08'41" W
MCZ 56449	Massachusetts	Hampden County	Holyoke, Connecticut River, Holyoke Power Canals	4 Jul 1979	42°12'42" N, 72°36'09" W
MCZ 56352	Connecticut	Hartford County	Windsor Locks, Connecticut River, Windsor Locks Canal	8 Aug 1974	41°56'10" N, 72°37'32" W
USNM 1161768 ^b	Connecticut	New Haven County	New Haven, West River, slough near Edgewood Avenue	17 Sep 2011	41°19'01" N, 72°57'24" W
USNM 1161769 ^c	Massachusetts	Barnstable County	Falmouth, Shiverick's Pond	21 Aug 2010	41°33'16" N, 70°36'49" W
USNM 1177585 ^b	Connecticut	New Haven County	New Haven, West River at Edgewood Avenue bridge	30 Aug 2008	41°19'02" N, 72°57'24" W
USNM 1177586 ^b	Connecticut	New Haven County	New Haven, West River at Edgewood Avenue bridge	20 Sep 2008	41°19'02" N, 72°57'24" W
YPM IZ 058253	Massachusetts	Barnstable County	Falmouth, Coonamessett Pond	22 Aug 2010	41°37'11" N, 70°34'07" W
YPM IZ 058280	Massachusetts	Barnstable County	Falmouth, Coonamessett Pond	22 Aug 2010	41°37'11" N, 70°34'07" W
YPM IZ 058321	Connecticut	New Haven County	Wallingford, Community Lake	21 Sep 2008	41°27'42" N, 72°49'55" W
YPM IZ 058322	Connecticut	New Haven County	Hamden, Clark's Pond	26 Jun 2009	41°25'02" N, 72°53'53" W
YPM IZ 058323 ^c	Massachusetts	Barnstable County	Falmouth, Shiverick's Pond	21 Aug 2010	41°33'17" N, 70°36'49" W

^aState locality record.

^bType locality of *P. ornata*.

^cType locality of *P. phalerata*, a junior synonym of *P. ornata* (Verrill, 1872).

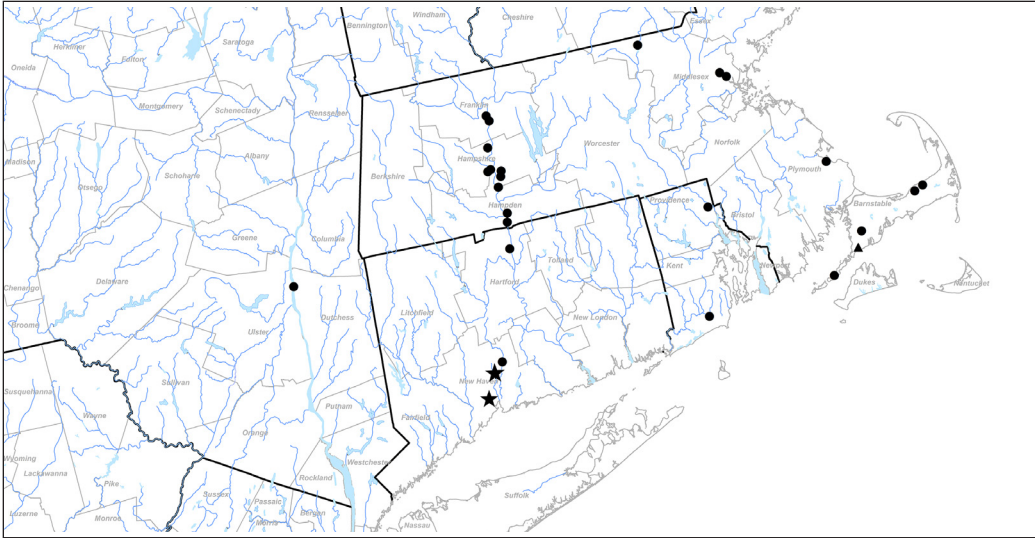


FIGURE 1. Distribution of *Placobdella ornata* (Verrill, 1872) (Hirudinida: Glossiphoniidae). Circle, new records; triangle, published locality; star, type locality.

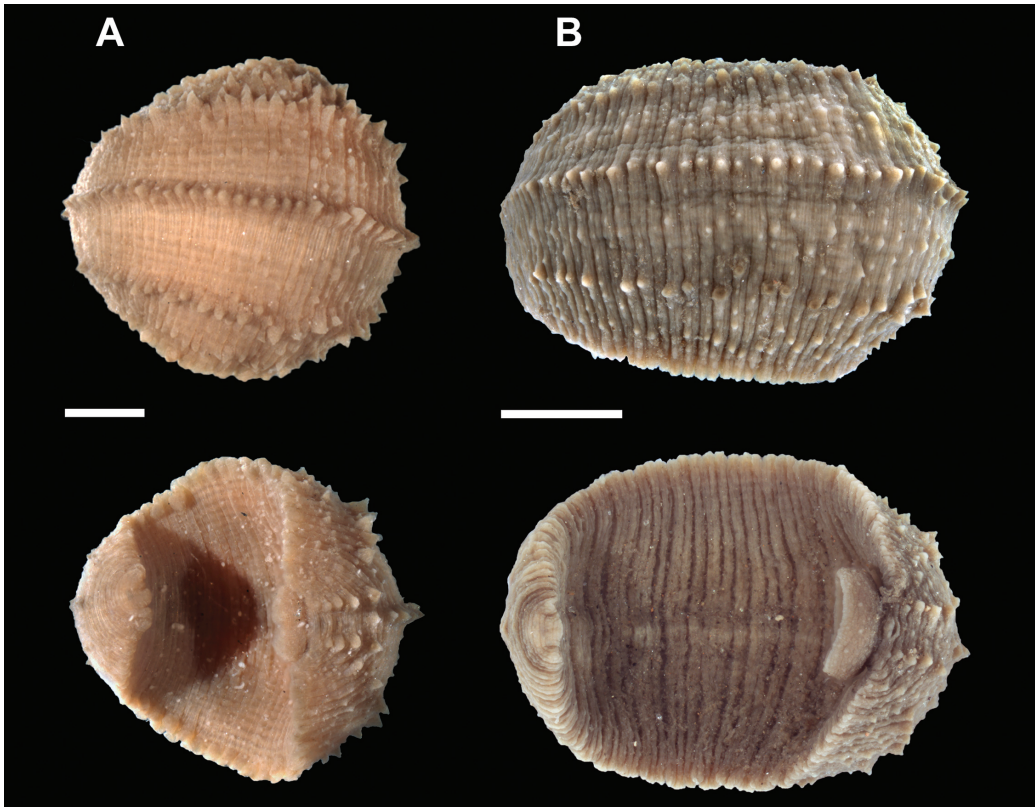


FIGURE 2. Dorsal surface of *Placobdella ornata* (Verrill, 1872) (Hirudinida: Glossiphoniidae) showing the three rows of dorsal papillae and the five-pair papillar pattern of the preanal region. A, MCZ 56446, Massachusetts specimen. B, YPM IZ 000256, lectotype. Scale bars equal 1 mm.

York and New Jersey localities; thus, we suggest that a resurvey of these localities be conducted to confirm the presence of *P. ornata*. Most of the *P. ornata* localities in this study were from the Connecticut River Watershed. As this watershed extends north into New Hampshire, Vermont, and Quebec (Canada), it is probable that additional specimens of *P. ornata* will be found in that region. Additional studies are needed to elucidate the entire range of *P. ornata*.

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