

BRIEF NOTE

Ohio Lamprey, *Ichthyomyzon bdellium* (Petromyzonidae), in Ohio: A Review and Recent Records¹

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ABSTRACT. Prior to 1983 only isolated specimens of Ohio lamprey (*Ichthyomyzon bdellium*) were collected at a few sites in the Ohio River drainage of Ohio, where it is listed as an endangered species. Seining surveys of the Little Muskingum River in 1983 and 1992 discovered a concentration of unattached adults in a riffle in May, as well as a recently metamorphosed subadult and an ammocoete, indicating that the species probably spawns there. Other Ohio River tributaries may support spawning populations as well.

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INTRODUCTION

The Ohio lamprey, *Ichthyomyzon bdellium* (Jordan), is a parasitic species found in streams of the Ohio River Basin, including the Allegheny, Kanawha, Licking, Kentucky, Green, Wabash, Cumberland, and Tennessee river systems (Lee et al. 1980). Adults inhabit larger, low-gradient rivers, where they feed in semi-parasitic fashion on fish. At the beginning of the second summer after metamorphosis, after approximately 23 months of parasitic existence, adults ascend smaller tributaries to spawn, then die. After hatching, ammocoetes burrow into sandbanks and mudbanks of those tributaries and live by filter-feeding, apparently for four years. Metamorphosis probably occurs in late summer or early fall, and subadults move downstream to assume an adult mode of life (Hubbs 1925, Lee et al. 1980, Trautman 1981).

Although the Ohio lamprey is relatively common throughout most of its range, its occurrence in Ohio appears to be peripheral (Lee et al. 1980, Trautman 1981), and it is listed as an endangered species in the state (Ohio Department of Natural Resources 1990). The Ohio lamprey was first collected in Ohio, supposedly from the Great Miami River, by Kirtland (1838) (Table 1). Kirtland later stated that the specimen had come from the Ohio River, but the specimen has apparently been lost, and the exact date and place of collection are uncertain (Hubbs and Trautman 1937, Trautman 1981). During extensive fish surveys of Ohio from 1920 to 1950, Trautman (1981) collected or examined an unspecified number of Ohio lampreys from 11 locations in the Ohio and Scioto rivers (Table 1), and noted a general decrease in abundance over those years. No evidence of spawning, such as ammocoetes or concentrations of unattached adults in smaller tributaries during spring or early

summer, was found in Ohio streams.

Only three Ohio lampreys were collected in Ohio during the 30 years following Trautman's surveys. One adult was collected in 1965 from the Ohio River in Washington County, and one adult was collected in 1969 from Salt Creek in Vinton County (Table 1). The Salt Creek specimen was attached to a white sucker (*Catostomus commersoni*) and was collected in October (White 1975), so it did not provide evidence of spawning in that stream. An extensive three-year investigation of the Ohio River by the Department of Biology, University of Louisville, yielded seven Ohio lampreys (Ohio River Valley Water Sanitation Commission 1981), only one of which was from Ohio waters (Table 1).

On 7 January 1983, during fish surveys of streams in southeastern Ohio by the Ohio Department of Natural Resources, Division of Natural Areas and Preserves (ODNAP), a recently metamorphosed subadult Ohio lamprey was collected by seine in the Little Muskingum River near Ring Mill at Poulton (Monroe County, Benton Township, Section 25). This collection indicated probable use of the river for spawning by Ohio lampreys, so the river was surveyed again in May, the probable spawning season.

MATERIALS AND METHODS

Most of the well-defined riffles along the entire length of the Little Muskingum River were sampled by daylight seining with a 1.8 m x 3.0 m (4.8 mm mesh) nylon net. Rather than dragging the net through the water, two persons held the net stationary at each end, perpendicular to the current and with the lead line as fully in contact with the streambed as possible. Both persons then moved out and upstream an arm's length and kicked back downstream toward the net, agitating the substrate to dislodge fish so that the current could carry them into the net. Quick retrieval of the net prevented subsequent escape of fish. One voucher specimen of Ohio lamprey was retained for each new site at which the species was found. These were fixed in 10% formalin and deposited at the Ohio State University Museum of Biological Diversity (OSUM) or at ODNAP.

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TABLE 1

Records of Ohio lamprey (Ichthyomyzon bdellium) from Ohio.

Stream (County)	Date (No. Collected)*	Reference**
G. Miami/Ohio R. (Hamilton)	1838 (1)	Kirtland (1838)***
Ohio R. trib. (Adams)	4/27/29 (1)	Ohio F 443†
Ohio R. trib. (?)	1929 (1)	OSUM 1473
Ohio R. (Adams)	4/29/31 (2)	OSUM 11652
White Oak Cr. mouth (Brown)	summer 1932 (1)	OSUM 35813
Scioto R. (Scioto)	4/3/40 (2)	OSUM 2969
Scioto R. (Scioto)	7/12/40 (1)	OSUM 2896
Ohio R. (Brown)	1920-1959 (?)	Trautman (1981)
Ohio R. (Adams)	1920-1950 (?)	Trautman (1981)
Ohio R. (Adams)	1920-1950 (?)	Trautman (1981)
Ohio R. (Lawrence)	1920-1950 (?)	Trautman (1981)
Ohio R. (Gallia)	1920-1950 (?)	Trautman (1981)
Ohio R. (Washington)	2/28/65 (1)	OSUM 14177
Salt Cr. (Vinton)	10/69 (1)	White (1975)
Ohio R. (Washington)	9/11/80 (1)	ORVWSC (1981)
L. Muskingum R. (Monroe)	1/7/83 (1)††	OSUM 55166
L. Muskingum R. (Washington)	5/11/83 (1)	ODNAP
L. Muskingum R. (Washington)	5/12/83 (10)	ODNAP
L. Muskingum R. (Washington)	5/18/83 (1)	ODNAP
Ohio R. (Washington)	10/7/91 (1)	Sanders (1992)
L. Muskingum R. (Washington)	5/19/92 (1)	ODNAP
L. Muskingum R. (Monroe)	5/20/92 (2)†††	ODNAP

*All specimens unattached adults except: Kirtland (1838), attached to walleye (*Stizostedion vitreum*); OSUM 11652, attached to golden redbreast (*Moxostoma erythrurum*) and river redhorse (*M. carinatum*); OSUM 14177, attached to unidentified sucker (*Catostomidae*); White (1975), attached to white sucker (*Catostomus commersoni*).

**Literature reference or Ohio State University Museum (OSUM) catalog number; ORVWSC = Ohio River Valley Water Sanitation Commission; ODNAP = Ohio Division of Natural Areas and Preserves reference collection.

***Type locality; specimen apparently lost.

†Probably an earlier catalog number for OSUM 1473.

††Recently metamorphosed, unattached subadult.

†††One ammocoete.

RESULTS AND DISCUSSION

Shortly after sunset on 11 May 1983, a dead, partly eaten adult Ohio lamprey was found on the shore of a riffle in the Little Muskingum River at the Hune Covered Bridge (Washington County, Lawrence Township, Section 6). On the morning of 12 May 1983, 10 adult Ohio lampreys were collected on the same riffle. The streambed at this site consisted of sandstone and shale gravel, cobbles, and boulders, and the water temperature was 13.9° C. Although the water was clear, the volume of flow was relatively high and prevented direct observation of any spawning activity. The site was sampled again on 18 May 1983, and one more adult was collected, bringing the total to 12 Ohio lampreys collected on this riffle (Table 1).

The Little Muskingum River was not surveyed by ODNAP again until 1992. In the interim, a survey of near-shore fishes of the Ohio River by the Ohio Environmental

Protection Agency produced one unattached adult from the river near Marietta on 7 October 1991 (Sanders 1992). On 19 May 1992, using the same methods as in 1983, ODNAP collected one unattached adult Ohio lamprey on a riffle in the Little Muskingum River just below the mouth of Haught Run (Washington County, Ludlow Township, Section 25). On 20 May 1992, another unattached adult and one ammocoete Ohio lamprey were collected on the same riffle at Ring Mill on which the recently metamorphosed subadult was collected on 7 January 1983 (Table 1). Stream conditions at both sites were similar to those encountered when the 1983 ODNAP collections were made.

The Little Muskingum River collections are the first clear evidence of spawning by Ohio lampreys in an Ohio stream. Additional study seems warranted in order to make direct observations of spawning activity and to determine biological characteristics of the population. Moreover, the discovery of this population raises the question of whether other Ohio River tributaries support spawning populations as well. The paucity of recent records may indicate the decline or extirpation of Ohio lampreys in Ohio streams, but it may also reflect a lack of effective sampling effort in the right places at the right times. Evidently, spawning occurs on riffles in May, as water temperature approaches 14° C. A gravel-cobble substrate and moderate to high volume of flow appear to be suitable if not essential. More intensive seining surveys of Ohio River tributaries when and where these conditions occur may document additional populations and further elucidate the status of this species in Ohio.

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