

BRIEF NOTE

DISCOVERY OF THE RIVER REDHORSE, *MOXOSTOMA CARINATUM*, IN THE GRAND RIVER, AN OHIO TRIBUTARY OF LAKE ERIE¹

ANDREW M. WHITE, Department of Biology, John Carroll University, Cleveland, OH
MILTON B. TRAUTMAN, Department of Zoology, The Ohio State University, Columbus OH

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The River Redhorse, *Moxostoma carinatum*, currently has a disjunct range. It is present in portions of the Canadian St. Lawrence River system, including Lacs St. Pierre and St. Louis and some northern tributaries (Scott and Crossman 1973). In the United States, the species was or is present in Michigan in the Muskegon River, a tributary of Lake Michigan, and in the Detroit River of Lake Erie. An 1893 specimen from the Tiffin River, a tributary of the Maumee River, is in the Lake Erie drainage of Ohio (Jenkins 1970). In the Mississippi drainage, it is or was present from Minnesota south to Arkansas, including portions of the Missouri and Ohio rivers, and in the Gulf drainage from the Pearl River eastward to and including the Escambia (Phillips and Underhill 1967). The species has become endangered or has been extirpated from many portions of this original range.

It may be assumed that in post-Wisconsin times the River Redhorse invaded the Great Lakes drainage from the Mississippi drainage, north-eastward through such glacial outlets as Lake Maumee. On one or more occasions, this lake was connected to the Wabash River and/or the Chicago outlet that connected the Illinois River with Lake Michigan (Greene 1935). By invading Lake Erie through the Lake Maumee outlet (Trautman 1957), the species could have continued eastward through that lake, the Niagara outlet, Lake Ontario and into the St. Lawrence drainage. There is no evidence of an Atlantic Coast refugium from a north-westward invasion.

Goslin (1943) found pharyngeal bones of this sucker in middens at a prehistoric Indian village near the present city of Painesville, Ohio, which is adjacent to the Grand River (Trautman 1957). The bones of other suckers and other fish species currently part of the Grand River fauna also were present; however, Indians commonly utilized fishes as food and occasionally carried smoked, sun-dried, or fire-dried portions of fishes on journeys. It is conceivable that the bones examined in the middens were from fishes captured in the tributaries of the Ohio River, less than 50 miles to the south, and transported to these localities where they were discovered by Goslin.

In 1974 we discovered a River Redhorse specimen without locality data in the classroom collections of John Carroll University. Although it was suspected that the specimen had been collected in northeastern Ohio, collections had also been made in southern Ohio, where the species is now known to occur. Later developments lend credence to the possibility of its having been collected in the Grand River drainage.

During the summer of 1976 the Grand River was examined at more than a dozen locations between the Lake-Ashtabula County line eastward through Lake County to Painesville. Much of this section appeared to contain ecological conditions such as those now present in streams of the Ohio River drainage where the species presently occurs. The stream ranged from 50 ft to 100 ft in width, and pools contained large areas of silt-free substrates, including rocks, cobbles and gravels. Despite thorough collecting with seines and experimental gill-

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nets, no River Redhorse was taken during the year, although many of the associates of the River Redhorse were captured, such as Silver Lamprey, *Ichthyomyzon unicuspis*; Muskellunge, *Esox masquinongy ohioensis*; Silver, *Moxostoma anisurum*; Black, *M. duquesnei*; Golden, *M. erythrurum* and Shorthead, *M. macrolepidotum*, redhorses; and Sand Darter, *Ammocrypta pellucida*.

We placed a Pennsylvania-style fish trap (Marinovich Trawl Co., Biloxi, MS) with a 4x6x16 ft car and 100 ft leads in the Grand River downstream of Painesville on 29 June 1977 at a location where the substrates were clean cobble at a depth of 4 to 7 ft. Three experimental gillnets (125 ft each) were positioned so that they restricted the downstream movement of fishes past the trap. When lifted on the morning of 30 June, the trap contained many species of fishes, including 2 River Redhorses, the largest an adult male with remnants of breeding tubercles, 450 mm SL (OSUMZ 35500), and the other a young male, 261 mm SL (JCU 1807).

During the remainder of 1977, the Grand River was sampled upstream of the Painesville area utilizing similar techniques. We captured 3 additional specimens of River Redhorse from 2 localities, suggesting that this species may occur throughout the Lake County portion of the drainage.

The collection of this species in the Grand River drainage of Lake Erie lends

considerable support to the concept of an invasion into the St. Lawrence through Lake Erie. Further, since the only other Ohio record of this species in the Lake Erie drainage was a single specimen from the Tiffin River in 1893, it is probable that the Grand River population represents the only remaining River Redhorses in Ohio's Lake Erie tributaries. The presence of this population also suggests that there may be other relict populations in the tributaries of Lakes Erie and Ontario, especially in Pennsylvania and New York.

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