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NEW DISTRIBUTIONAL RECORDS OF SOME MINNESOTA FISHES[1]

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Minnesota is almost unique in that its waters drain by three divergent courses: the Red River to the Arctic, the Great Lakes to the Gulf of St. Lawrence and the Mississippi River to the Gulf of Mexico. The close proximity of the headwaters of these several drainages present opportunities for certain species to move from one basin to another. Species restricted to the Arctic basin have their southern limits in northern and western Minnesota. Many eastern and southern species have their northern and western limits within the state. In spite of the fact that intensive collecting has been carried on since 1890 by various workers new records or range extensions are made each year.

Eddy and Underhill (1959) and Schumacher and Eddy (1960) have reported on new species that have invaded or been introduced into the waters of Minnesota within recent years. Systematic collecting by the personnel of the Minnesota Department of Conservation and the staff of the Zoology Department, University of Minnesota, continue to produce new records of the range and distribution of many fishes in Minnesota. Low water levels in the fall of 1960 permitted collecting in areas normally too deep for seining and may account for some of the new records reported.

Collections made during the fall of 1960 yielded a number of specimens of the speckled dace, *Hybopsis aestivalis* (Girard) which was thought to be absent from Minnesota waters. Underhill (1957) considered that the specimens from the Blue Earth River which Cox (1897) reported as *H. hyostomus* (Gilbert) were probably synonomous with the species now known as *Hybopsis x-punctata* (Hubbs and Crowe). Dr. Carl L. Hubbs (per comm.) pointed out the error of this interpretation. Greene (1935) reported *H. aestivalis* from the Mississippi River and its tributaries south of La Crosse, Wisconsin. Since no collections of the speckled dace had been made in Minne-

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sota since those made by Cox and no specimens were extant it was assumed that Cox's identification was in error and that the species did not occur in Minnesota. These latter assumptions were proved incorrect as a single specimen of *H. aestivalis* was collected October 31, 1960 from the St. Croix River just south of O'Brien State Park, Washington Co., Minnesota. Subsequently specimens were collected in southern Minnesota from two stations on the Cannon River, a tributary of the Mississippi River. Several specimens were collected from two stations on the Minnesota River, one at the mouth of the Blue Earth River and the second just west of the mouth of the Little Cottonwood River, in addition a large series was obtained from the Cottonwood River, a tributary of the Minnesota River near New Ulm, Minnesota (Figure 1). These specimens definitely establish the presence of the speckled dace in the Mississippi drainage of the state.

The western sand darter, *Ammocrypta clara* Jordan and Meek, is represented in the University collections by specimens from the Mississippi River below Lake Pepin. Cox (1897) reported this species from the Minnesota and Blue Earth Rivers at Mankato, Minnesota. Specimens of the western sand darter have recently been collected from the St. Croix River. A large collection was made over a sand bar in a side channel of the St. Croix River near O'Brien State Park and a single specimen was taken from the river a few miles south of Taylors Falls, Minnesota (Figure 1). Greene (1935) gave no records for this species from Wisconsin but gave numerous records of the northern sand darter, *A. pellucida* (Baird) from the St. Croix River and the Mississippi River and its tributaries. Eddy and Surber (1947) quote Dr. Carl L. Hubbs as stating that *A. pellucida* is limited to the Great Lakes and Ohio River drainages and that *A. clara* is the species found in the upper Mississippi River and Minnesota River drainages. The present range of the species extends northward on the St. Croix River to Taylors Falls, Minnesota. This is probably not a recent extension of the range but a correction of the confusion concerning the identification of this fish.

The river darter, *Percina shumardi* (Girard) which occurs in larger streams such as the Mississippi, Red and Rainy rivers has not been reported from the St. Croix River above Lake St. Croix (Greene 1935). Underhill (1957) failed to collect any specimens in the St. Croix River above Lake St. Croix. In the fall of 1960 two collections of this darter were made from the St. Croix River at O'Brien State Park and a third collection was made a few miles south of Taylors Falls.

The stoneroller, *Campostoma anomalum Raf.*, a common minnow of the streams of central and southern Minnesota has not been previously found in the St. Croix River north of Taylors Falls. Neither Greene (1935) nor Underhill (1957) reported specimens from this area although the species ranges farther northward and is common in the Rum River, a tributary of the Mississippi River above St. Anthony Falls. In the summer of 1960 this species was collected from Rock Creek, a tributary of the St. Croix River north of Taylors Falls.

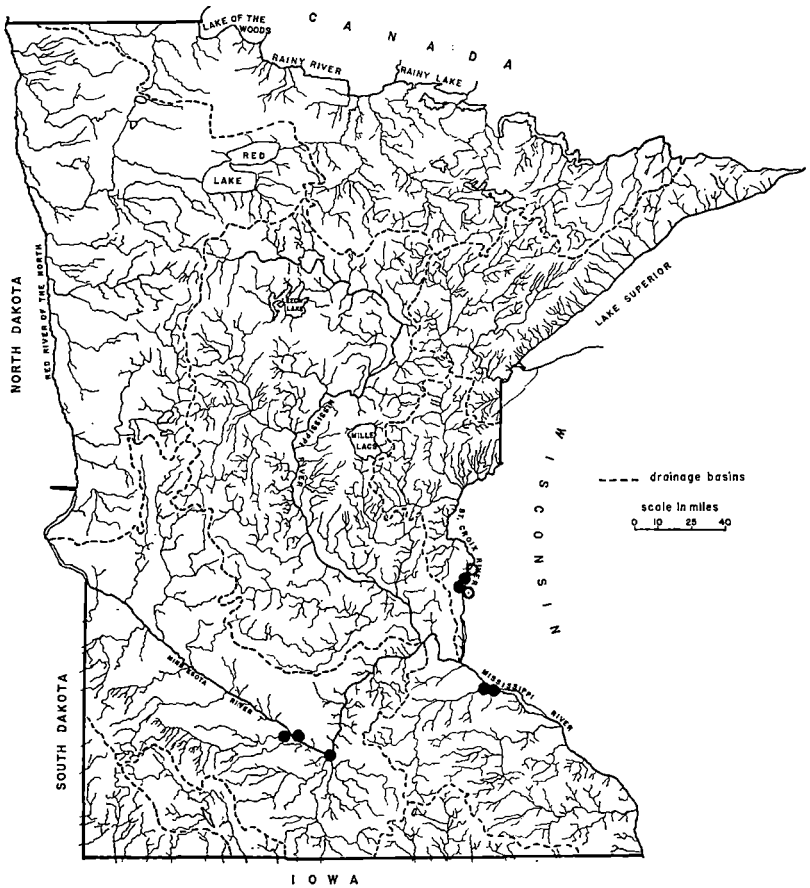

Figure 1. The distribution of the speckled dace, *Hybopsis aestivalis* (closed circle) and the western sand shiner, *Ammocrypta clara* (open circle) in Minnesota.

The stoneroller was also collected by Mr. Oscar Kalin of the University of North Dakota on August 6, 1960, from the Forest River, a tributary of the Red River north of Grand Forks, North Dakota. This establishes the range of the stoneroller in the Arctic drainage for the first time.

The finescale dace, *Chrosomus neogaeus* (Cope) is a northern species ranging through the Great Lakes and Arctic drainages of northern Minnesota (Eddy and Surber, 1947). Although Greene (1935) reported it from the Mississippi River drainage of southern Wisconsin, until now it has never appeared in any of the hundreds of collections made from the Mississippi River drainage in Minnesota. A single specimen was collected June 22, 1960 by Jeanette Ernest from the Mississippi River near its source at Lake Itasca in Clearwater County. Mr. John Dobie (per comm.) of the Minnesota Conserva-

tion Department has pointed out that this species could have been introduced by fisherman as it is commonly used for bait.

The nine-spine stickleback, *Pungitius pungitius* (Linn.) is endemic to the Great Lakes and Arctic drainages in this state. Two specimens were found in a collection made in the summer of 1958 by a Minnesota Department of Conservation crew from Lake Winnibigoshish (Cass Co.), a part of the Mississippi River. This is the first known record in this region of its occurrence in the Mississippi drainage. It is possible that it could have passed from the Arctic drainage by way of flooded swamps from Bowstring Lake to Cut-Foot-Sioux Lake which empties into Lake Winnibigoshish. Some years ago, several walleyes tagged in Cut-Foot-Sioux were recovered from Bowstring Lake. They were assumed to have passed between drainages by this route.

Improved methods of collecting may account for some of the new records but perhaps some of these records indicate recent movements of fishes. The distributions of fishes are not fixed and future collecting may reveal further changes and movements. The presence of a species can be established without question but the absence of a species is not so easily proved. The proof of recent migration is therefore not easily demonstrated but it seems reasonable to assume that the ranges of certain species are presently expanding.

The tremendous growth of the live bait industry and the improvement in transportation facilities for small bait fishes must also be considered as a means of distribution over land barriers. In addition, ecological factors such as water levels, temperature, breeding sites, food supply, etc. may be important in determining the relative abundance of a species in a given year (Starrett 1951). If such fluctuations as reported by Starrett are characteristic of fish populations in Minnesota, only repeated collecting can hope to reveal the presence of a rare species.

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