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Revised Distribution Records of Some Minnesota Fishes, With Addition of Two Species to the Faunal List

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ABSTRACT — Recent collections of fishes in Minnesota have resulted in the addition of two species, *Moxostoma carinatum* (Catostomidae) and *Ammocrypta asprella* (Percidae), to the state's inland faunal list. Additional information on the distribution of 11 other species (*Minytrema melanops, Hybopsis x-punctata, Opsopoeodus emiliae, Dionda nubila, Notropis amnis, Notropis texanus, Notropis umbratilis, Pimephales vigilax, Lepomis humilis, Etheostoma asprigene,* and *Etheostoma microperca*) is presented. Collections in large rivers are responsible for several new distribution records, and further sampling in such habitats should lead to further discoveries.

Since the last comprehensive treatment of the fish fauna of Minnesota (Eddy and Surber, 1947), a number of species have been added to the state's faunal list (Underhill, 1957; Eddy and Underhill 1959; Nordlie et al, 1960; Schumacher and Eddy, 1960).

Two species, *Moxostoma carinatum* (Catostomidae) and *Ammocrypta asprella* (Percidae), were taken in recent collections by the authors, their associates, and personnel of the Minnesota Conservation Department, and are reported for the first time from within Minnesota in the present paper. There is also presented more detailed information on 11 other species whose distributions in the state have recently come to be better understood.

Thirty-six specimens of the river redhorse, *Moxostoma carinatum* (Cope), ranging in total length from 32 to 76 centimeters, were collected by Conservation Department personnel in Lake St. Croix in the summer of 1966. The pharyngeal teeth of *M. carinatum* are heavy and molariform (Fig. 1). This characteristic distinguishes it from other Minnesota redhorses, which have fragile, comblike teeth. A skeleton of *M. carinatum*, including the diagnostic pharyngeal teeth, was found on a sandbar at the mouth of the Sunrise River, Chisago County, on October 21, 1966. These specimens extend the known range of this species approximately 150 miles northward in the Mississippi River (Fig. 2).

Examination of redhorses (misidentified as *M. aureolum* [now *M. macrolepidotum*]), in the collection at the University of Minnesota's Natural History Museum revealed specimens of *M. carinatum* taken in 1899 from the Minnesota River valley in Scott County at Belle Plaine and Jordan.

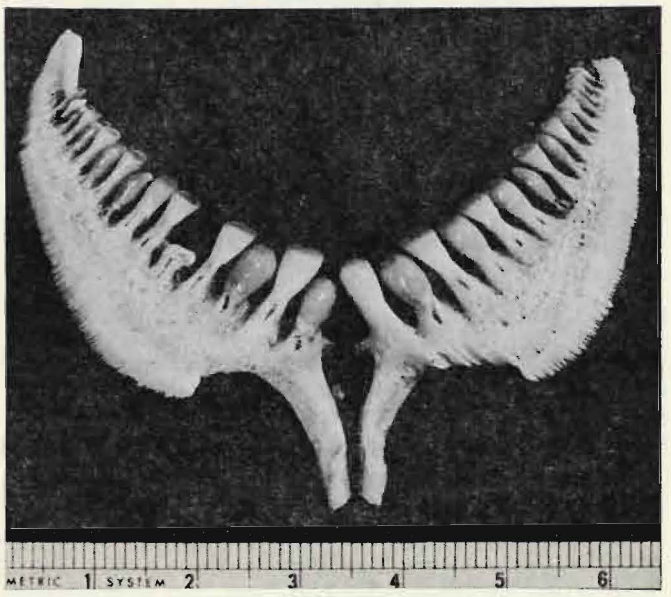

FIGURE 1. Pharyngeal arch of the river redhorse, *Moxostoma carinatum*, showing molariform pharyngeal teeth.

Harlan and Speaker (1956:78) noted the occurrence of the river redhorse in Iowa in the 1890's but considered that it had possibly become extinct in Iowa waters since then. The species inhabits large rivers, and the lack of knowledge concerning its distribution may be due to inadequate sampling of its habitat.

The spotted sucker, *Minytrema melanops* (Rafinesque), appears to be rare in Minnesota. It has been taken in the Mississippi River and its tributaries, including the St. Croix (Greene, 1935:63) and the Minnesota (Eddy and Surber, 1947:133), although no specimens are extant from the latter. Two specimens, a male and a female, were seined in Lake Pepin at King's Cooley on October 31, 1965, and the Conservation Department took five specimens from Lake St. Croix in 1966 (Fig. 2).

The gravel chub, *Hybopsis x-punctata* Hubbs and Crowe, was not included in the Minnesota faunal list by

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Field work was supported in part by funds from the Graduate School, University of Minnesota.

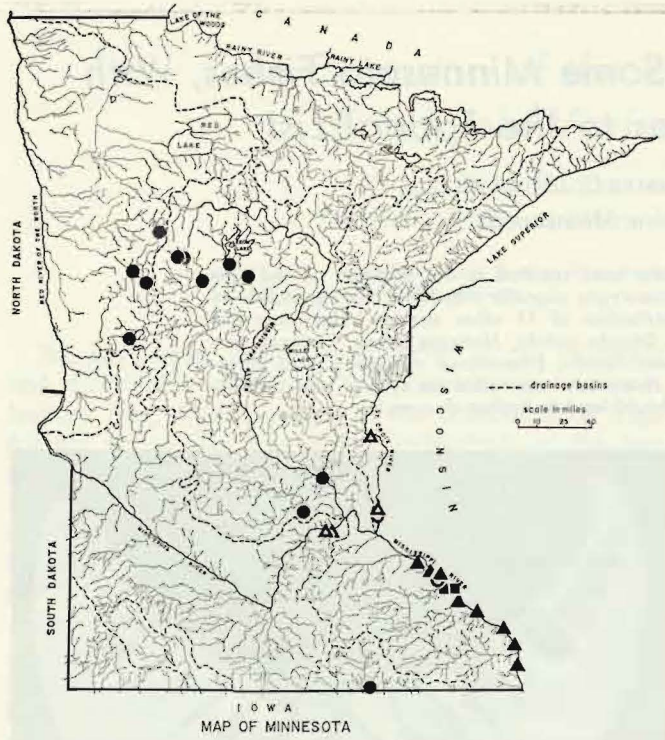

FIGURE 2. Distribution records of the spotted sucker, *Minytrema melanops* (open circles), river redhorse, *Moxostoma carinatum* (open triangles), least darter, *Etheostoma microperca* (closed circles), mud darter, *Etheostoma asprigene* (closed triangles), and crystal darter, *Ammocrypta asprella* (squares), in Minnesota.

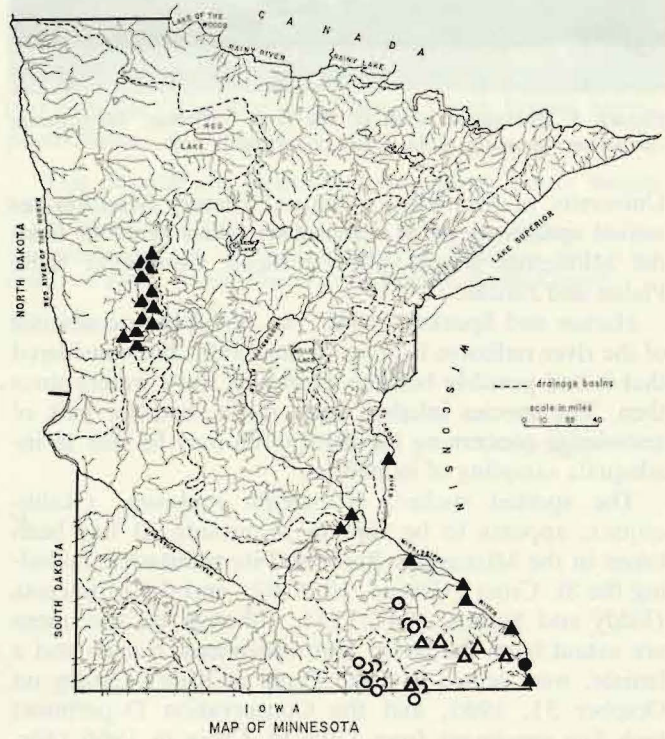

FIGURE 3. Distribution records of the redfin shiner, *Notropis umbratilis* (open circles), gravel chub, *Hybopsis x-punctata*)open triangles), pallid shiner, *Notropis amnis* (closed circle), and weed shiner, *Notropis texanus* (closed triangles), in Minnesota.

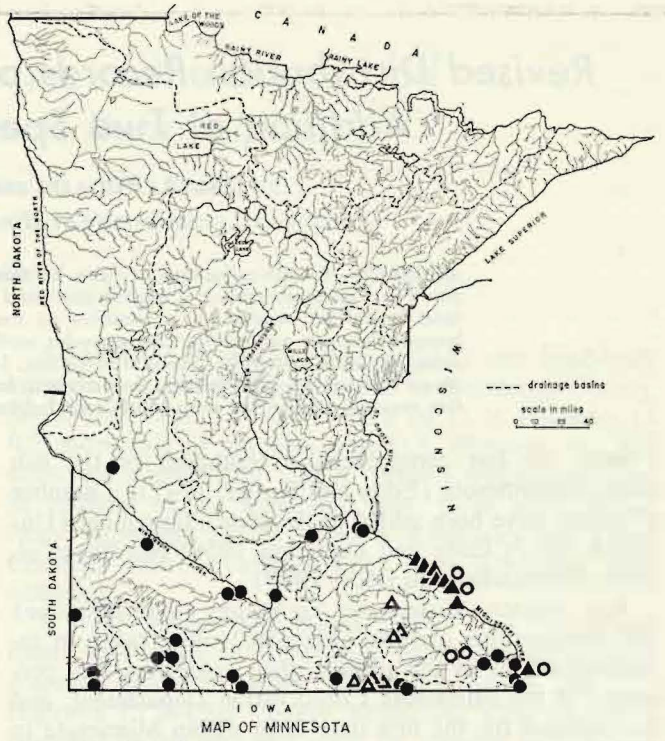

FIGURE 4. Distribution records of the pugnose minnow, *Opsopoeodus emiliae* (open circles), Ozark minnow, *Dionda nubila* (open triangles), orange-spotted sunfish, *Lepomis humilis* (closed circles), and bullhead minnow, *Pimephales vigilax* (closed triangles), in Minnesota.

Underhill (1957), but specimens taken prior to 1957 from the Root River by the Conservation Department have since been found in the University of Minnesota collection. On October 12, 1966, one was taken from the Upper Iowa River, 1.5 miles east of Granger, Fillmore County (Fig. 3). The species is rare and may be dwindling in and around Minnesota (Hubbs and Lagler, 1958: 79). According to Harlan and Speaker (1956:91), "This chub has very specific living requirements and as its name implies, is usually found in swift water over a pea-gravel bottom."

Old records of the pugnose minnow, *Opsopoeodus emiliae* Hay, exist for the Root and Zumbro Rivers near the Mississippi River, and 41 specimens were seined from the Mississippi near Brownsville, Houston County, on October 12, 1965. This species was also collected at Steamboat Bay, Lake Pepin, by the Conservation Department in 1966. The latter specimens extend the known range of this minnow slightly northward in the Mississippi River (Fig. 4).

The Ozark minnow, *Dionda nubila* (Forbes), was found in Minnesota in the south branch of the Zumbro River, Dodge County, and Otter Creek, Mower County (Underhill, 1957:20). Since then, the minnow has been collected several times in the Zumbro-River and Cedar-River drainage basins. The northernmost record in Minnesota is based on five specimens collected May 19, 1965, in the north branch of the middle fork of the Zumbro River in Dodge County (Fig. 4). Harlan and Speak-

er (1956:99) noted that the Ozark minnow is restricted in Iowa to lime rock creeks and streams in the northeastern portion, and suggested that its occurrence there may be due to some geological requirement met in no other area of the state.

Until recently Minnesota specimens of the pallid shiner, *Notropis amnis* Hubbs and Greene, were not represented in the University of Minnesota collection. Underhill (1957:18) summarized what was known at that time of the distribution of the species in the Mississippi River in Minnesota, based on collections borrowed from the University of Michigan Museum of Zoology. However, four specimens were seined from the Mississippi near Brownsville, Houston County, on October 12, 1965 (Fig. 3).

The weed shiner, *Notropis texanus* (Girard), is now known from the Red River drainage basin in Minnesota as well as from the lower Mississippi basin (Fig. 3). As noted previously (Hubbs, 1926:39, Hubbs and Greene, 1928:372), this shiner is easily confused with the blackchin shiner, *Notropis heterodon*: both have a black lateral band that encroaches on the chin. Several specimens of *N. texanus* misidentified as *N. heterodon* were found by Underhill (1957). Subsequent re-examination of all collections of *N. heterodon* from Minnesota has revealed many *N. texanus* from the Ottertail River, a tributary of the Red River. The two species were together in most of these collections. A detailed study of all Minnesota material is presently in progress. Distinguishing characteristics of *N. texanus* from Minnesota are seven anal fin-rays, lateral line usually incomplete, and length of eye greater than length of snout (Table 1).

The redfin shiner, *Notropis umbratilis* (Girard), was restricted in Minnesota to the Cedar River drainage basin by Underhill (1957:16). Recent collections indicate that the range of this species is more extensive and includes the Zumbro River also (Fig. 3). The largest collections of *N. umbratilis* to date have been taken from Otter Creek, Mower County: 18 specimens from one mile east of Lyle, on August 15, 1960, and 37 specimens at Lyle on September 24, 1965. The northernmost record to date is represented by five specimens collected on May 19, 1965, from the north branch of the middle fork of the Zumbro River, Dodge County.

Prior to 1964 the bullhead minnow, *Pimephales vigilax* (Baird and Girard), had been taken only twice in Minnesota (Underhill, 1957:21) but has appeared more frequently in recent collections. On October 31, 1964, it was taken in four collections from or near Lake Pepin, including 45 specimens from the Whitewater River at Highway 61, Wabasha County, and 66 specimens from the Zumbro River at Highway 61 in the same county, and on October 12, 1965 (Fig. 4), 28 specimens were taken from the Mississippi near Brownsville, Houston County.

A synopsis of state distribution records on the orange-spotted sunfish, *Lepomis humilis* (Girard), is here included to supplement the general discussion of Eddy and Surber (1947:237). Specimens are known from the Minnesota, Missouri, and lower Mississippi drainage basins in Minnesota (Fig. 4), but none from the upper Mississippi (north of St. Anthony Falls), Red River, St. Croix, Superior, or Arctic drainages.

The crystal darter, *Ammocrypta asprella* (Jordan), was taken for the first time in Minnesota inland waters on August 16, 1961, at two stations on the Zumbro River, Wabasha County. Six specimens were collected in swift water over sand and gravel below the Highway 61 bridge, one mile north of Kellogg, Minnesota. Another individual was taken two miles upstream (Fig. 2). A previous record for the crystal darter exists from the Mississippi at Winona (Bailey and Gosline, 1955:37) in the boundary waters of the state.

The mud darter, *Etheostoma asprigene* (Forbes), is known from the Mississippi as far north as the head of Lake St. Croix (Greene, 1935:184), and from Hay Creek, Goodhue County (Underhill, 1957:23). It recently appeared in collections from the lower Mississippi (below St. Anthony Falls) and tributaries (Fig. 2). One specimen was taken in Rollingstone Creek, Minnesota City, Winona County, on November 20, 1964. The largest single collection made by the authors (four specimens) was at the same place on October 12, 1965. The mud darter has also been taken from the Whitewater River in Wabasha County, the Mississippi at Brownsville, and from Lake Pepin on three occasions. As its common name suggests, the mud darter is thought to prefer sloughs and sluggish waters but our records from Rollingstone Creek show that it also lives in swift water having a boulder-rubble bottom.

The least darter, *Etheostoma microperca* Jordan and Gilbert, has a disjunct distribution in Minnesota. Until 1962 it had been collected only in tributaries of the Red

TABLE 1. Anal fin-ray counts, pharyngeal teeth counts, length of eye in relation to snout length, and numbers of specimens of the weed shiner, *Notropis texanus*, from Minnesota with complete and incomplete lateral lines.

Pharyngeal Teeth	N (145)	Anal Fin Rays	N (151)	Eye-Snout Length	N (125)	Lateral Line	N (136)
2,4–4,2	68	6	1	Eye > Snout	114	Complete	16
2,4–4,1	16	7	150	Eye = Snout	6	Incomplete	120
1,4–4,2	30	8	0	Eye < Snout	5		
1,4–4,1	26						
0,4–4,1	1						
2,5–4,1	1						
2,2,5–4,2	1						
2,4–4,1,2	1						
1,5–5,1	1						

River and in the upper Mississippi River (above St. Anthony Falls). In 1962, a large population of this smallest of Minnesota fishes was found in Otter Creek, a tributary of the Cedar River, near Lyle, Minnesota (Fig. 2). Meek (1892; 1893) reported the least darter as "rare" in the Cedar River drainage in Iowa, and Cleary (1953:634) did not collect it during an intensive survey of the same river system. The Otter Creek population is presumably a relict of a somewhat larger population that may have existed in the late nineteenth century.

Collections from southern Minnesota account for much of the distributional information presented above. Knowledge of the distribution and status of such species as *Dionda nubila* and *Notropis umbratilis* has been improved by sampling streams of the lower Mississippi and Cedar River drainages, particularly the Zumbro River and Otter Creek. Collections from the lower Mississippi itself indicate that such species as *Opsopoeodus emiliae* and *Pimephales vigilax* may prove to be fairly common as more information is gathered. Further sampling here and in other large rivers, which have been relatively neglected, will prove most helpful in further refining knowledge of the distribution of Minnesota fishes.

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