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Selected Records of Stream Fishes from the Kansas River Basin in Kansas

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We summarize noteworthy records for nine species of fishes taken during stream surveys conducted in the Kansas River basin within Kansas from 1992 through 1995.

INTRODUCTION

During 1992, we sampled fishes at 30 sites in the Kansas River and Smoky Hill River (as far west as Salina). Following this project (and the floods of 1993), we visited 30 sites in 1994 and 1995 along the Smoky Hill River (from Salina west through Wallace County), the Saline River, Solomon River, North Fork Solomon River, and South Fork Solomon River. Information from 77 additional samples was obtained by field crews from the Kansas Department of Wildlife and Parks (KDWP) and Fort Hays State University (FHSU) in 1994 and 1995. Samples were obtained with seines or electrofishing equipment. Fish were identified and counted, either in the field (mostly larger specimens) or in the museum, to determine relative abundances of species at each site. Voucher specimens for these records are housed in the Collection of Fishes at the Sternberg Museum of Natural History (formerly the Museum of the High Plains; MHP) at FHSU, Hays, Kansas. Also included in this summary are records from recently sorted collections at the Sternberg Museum. Computerized records (FishGopher, Cornell University) of the fish collections at the University of Kansas Natural History Museum (KU) and University of Michigan Museum of Zoology (UMMZ) were checked during our studies. This report summarizes records for nine species. Seventy-one additional county records for the maps compiled by Cross and Collins (1995) were listed in the newsletter of the Kansas Chapter of the American Fisheries Society (Eberle and others, 1995).

Silver Chub, *Macrhybopsis storeriana*

The only previous records of the silver chub in the Republican River were a collection obtained in 1910 (KU 439) from Clay County, Kansas, (Metcalf, 1966) and a single specimen (UMMZ 134348) collected from the Republican River in Dundy County, Nebraska, in 1939 (Metcalf, 1966). Recently

sorted collections at the Sternberg Museum of Natural History included nine specimens of the silver chub from the Republican River near Clay Center (Clay Co., T8S, R2E, sec. 2; 21 April 1968, MHP uncatalogued) and three fish captured near the Nebraska state line (Jewell Co., T1S, R6W, sec. 4; 7 September 1987, MHP 2544). This species is a rare member of the fish community in the lower Republican River basin, and the sporadic reports available might reflect limited collecting efforts in this stream.

Bigmouth Shiner, *Notropis (Hybopsis) dorsalis*

The bigmouth shiner is a species in sandy-bottomed streams throughout the Platte River system and northern basins in Nebraska, but it has not been reported previously from the Republican River or Smoky Hill River basins. Single individuals were collected twice from the Republican River at Scandia (Republic Co., T3S, R4W, sec. 8 and 17; 18 July 1995, MHP 6205; 26 August 1995, MHP 6260). Given their abundance in similar streams in adjacent states, we anticipate that the bigmouth shiner will become more numerous in the Republican River. The reason for its original absence from the Republican and Smoky Hill river systems is unknown (Metcalf, 1966).

Bullhead Minnow, *Pimephales vigilax*

The bullhead minnow is native to streams in the Neosho and Arkansas river drainages of southeastern Kansas. They were unknown in the Kansas River drainage until 1976 when Cross and Haslouer (1984) reported their capture in the Kansas River at Lawrence (Douglas County) and in a channelized section of a tributary, Soldier Creek, near Topeka (Shawnee County). Collections during the next five years extended the known range of this species in the Kansas River from its mouth upstream to the Smoky Hill River in Geary County (Cross and Haslouer, 1984).

Our surveys documented the presence of this species within the Smoky Hill River from its mouth upstream to near Kanopolis Reservoir (McPherson County). A single bullhead minnow was reported to us in November 1995 from the Smoky Hill River southeast of Ellsworth, upstream from Kanopolis Reservoir, but the specimen was released. We visited this site on 14 November 1995 and collected 1123 fish, which were concentrated in pools about 1 m deep. This sample was sorted in the museum and included no bullhead minnows. The sample was comprised almost exclusively of sand shiners (*Notropis ludibundus* = *Notropis stramineus*; 60.3%) and red shiners (*Cyprinella lutrensis*; 39.3%). We expect bullhead minnows will become established above Kanopolis Reservoir, probably through bait-bucket introductions.

We collected bullhead minnows at the previously unreported locations given in Table 1. Relative abundance values of the three species of *Pimephales* are noted for each site. Our data agree with the assessment of Cross

Table 1. Recent capture localities of bullhead minnows in Smoky Hill River, with relative abundance values for three species of *Pimephales* now occurring in Kansas River basin. These specimens are in lots that have not been catalogued at Sternberg Museum of Natural History (MHP) at Fort Hays State University.

Locality	Date	Relative abundance (%)			Total number of fishes
		Bullhead minnow	Bluntnose minnow	Fathead minnow	
Dickinson Co., T12S, R4E, sec. 32	26 May 1992	28.2	4.1	0.0	241
Dickinson Co., T13S, R2E, sec. 28	26 May 1992	8.8	0.0	0.0	34
Dickinson Co., T13S, R1E, sec. 19	26 May 1992	13.5	0.0	0.0	229
Saline Co., T13S, R1W, sec. 34	26 May 1992	20.2	0.0	0.0	45
Saline Co., T14S, R2W, sec. 3 & 4	26 May 1992	4.1	0.0	1.0	98
Saline Co., T15S, R2W, sec. 18 & 19	15 Oct 1995	3.0	0.0	0.0	201
McPherson Co., T17S, R5W, sec. 16 & 21	15 Oct 1995	1.8	1.2	0.0	491

and Haslouer (1984), who suggested that the relative abundance of the bullhead minnow in main stem rivers eventually exceeds that of its congeners, the bluntnose minnow (*Pimephales notatus*) and fathead minnow (*Pimephales promelas*), which are native to the Kansas River basin but reach their greatest abundance in smaller tributary streams. In Missouri, bullhead minnows greatly outnumber bluntnose minnows in larger rivers and Lowland ditches (Pflieger, 1975). The subspecies of bullhead minnow occurring in Kansas (*P. vigilax perspicuus*) is tolerant of turbidity and rapid deposition of silt (Trautman, 1981) and occurs mainly in large rivers (Cross, 1967). Because of their preference for larger streams, bullhead minnows might establish small populations or could remain absent in the upper reaches of the Smoky Hill, Solomon, and Saline rivers and their tributaries. We did not capture any bullhead minnows at eight sites sampled during 1994 in the Solomon River and Saline Rivers downstream from Waconda and Wilson reservoirs to their confluences with the Smoky Hill River just east of Salina. We anticipate that they will be captured in these reaches as more collections are made.

The relative abundances of the bullhead minnow in our samples ranged from 1.8 to 28.2% (Table 1), but these collections were comprised of few individuals (34 to 491). In 1992, T. L. Wenke (unpubl. obs.) collected 13,082 fish from 25 localities along the length of the Kansas River. In these samples, bullhead minnows were the most abundant of the *Pimephales* species (81%), but comprised only 1.3% of the total number of fish captured. At this time, we believe it is unlikely that the bullhead minnow will become one of the dominant species in the Kansas River basin.

Brassy Minnow, *Hybognathus hankinsoni*

One brassy minnow (relative abundance of 0.3%) was collected by a crew from KDWP in the Smoky Hill River upstream from Cedar Bluff Reservoir

(Trego Co., T15S, R24W, NW¼ sec. 1; 9 June 1994, MHP 2488). Within Kansas, this is the first record of this species outside of the extreme northwestern and northeastern parts of the state, and it was noted in the most recent reference on Kansas fishes by Cross and Collins (1995). Brassy minnows were taken previously from streams in the Smoky Hill River basin in Wallace County (Cross, 1967). Brassy minnows do best in waters where piscivorous fishes are low in number or absent (Becker, 1983; Scott and Crossman, 1973). Of the 375 fish captured at this site, the piscivorous fishes were creek chubs (*Semotilus atromaculatus*), green sunfish (*Lepomis cyanellus*), channel catfish (*Ictalurus punctatus*), and black bullheads (*Ameiurus melas*), which comprised 12.5%, 1.9%, 0.3%, and 0.3% of the community, respectively.

Two brassy minnows (relative abundance of 0.3%) were captured in the Republican River on 26 August 1995 (Republic Co., T1S, R5W, SW¼ sec. 6; MHP 6246). Plains minnows (*Hybognathus placitus*) also were captured at this site. This is the first record of the brassy minnow from the Republican River basin in north-central Kansas; however, a single specimen was taken previously from a tributary of the Republican River, Cottonwood Creek, downstream from Harlan County Reservoir in Franklin County, Nebraska, on 10 July 1961 (KU 7039; Metcalf, 1966).

Plains Minnow, *Hybognathus placitus*

One of the objectives of our surveys was to assess the status of minnow species protected in Kansas. The plains minnow is listed as a "species in need of conservation" (K.A.R. 115-15-2). It was formerly more abundant in rivers within the Kansas River system than it is at present (Cross and Moss, 1987). Plains minnows were collected previously in both forks of the Solomon River, the Solomon River, Saline River, and Smoky Hill River (Fig. 1). They were abundant in the Saline River upstream from Wilson Reservoir through the mid-1970's, but have not been taken during the last 20 years (T. L. Wenke, unpubl. obs.). Summerfelt (1967) obtained the greatest numbers of plains minnows during 1965–1966 at two of his eight sites along the Smoky Hill River: upstream from Cedar Bluff Reservoir (western Trego County) and near Junction City (Geary County). A sample of 60 individuals was collected from the Smoky Hill River in Ellis County south of Hays in April 1954 (KU 3246). The only site out of 30 on the Smoky Hill River or its tributaries at which plains minnows were taken in 1994 and 1995 was in southwestern Gove County (T15S, R31W, NW¼ sec. 4; 21 July 1995, MHP 7351). Only three, young-of-the-year individuals were captured (relative abundance of 0.6%). The species was previously collected here in 1978 (Collins, 1981).

Plains minnows are most abundant in permanent streams with a shallow, braided flow over broad beds of shifting sand (Cross, 1967). They school

Figure 1. Distribution of plains minnow (*Hybognathus placitus*) in Kansas. Open circles represent collections of species from 1885 to 1969; closed circles represent records from 1974 through 1995.

near the bottom in areas of the channel where slower currents allow material to accumulate, such as backwaters, gentle eddies, and pools (Cross, 1967; Pflieger, 1975). At the Gove County site, the channel was sandy, but not braided. It consisted of a narrow, sandy segment flowing into a broad, silty pool utilized by cattle. Braided channels are not usual now in rivers of the Smoky Hill River system. This type of stream exists in places along the Smoky Hill River between Cedar Bluff and Kanopolis reservoirs, and we captured plains minnows from the mouth of Big Creek on the Smoky Hill River in southwestern Russell County on three occasions during 1983–1984 (the water was too high to seine this site effectively when visited in 1994). It seems likely to us that the species occurs in low relative numbers in two reaches of the Smoky Hill River: eastern Logan, Gove, and western Trego counties and Russell and Ellsworth counties. We are not optimistic that it occurs in the North and South Forks of the Solomon River or the Saline River.

Seemingly, the plains minnow never was abundant in the Smoky Hill, Saline, or Solomon rivers in central Kansas (downstream from Kanopolis, Wilson, and Waconda reservoirs through Dickinson County). These reaches had deep, cohesive banks and no braided streamflow at any of the sites viewed by us in 1995 (about 10 sites on each stream). Within this region, only three pre-impoundment records exist for plains minnows: "Solomon River overflow," Cloud County, south of Glasco (UMMZ 144885; 6 specimens; 18 April 1942); Smoky Hill River, McPherson County, near Mar-

quette (UMMZ 122041 & 122113; 18 specimens; 27 August 1926); and Smoky Hill River, McPherson County, below the dam at Lindsborg (UMMZ 126920; 4 specimens; 9 July 1937). Farther downstream, plains minnows now are rare in the lower Smoky Hill River and Kansas River (Cross and Moss, 1987; Wenke, Ernsting, and Eberle, 1993; K. Shaw, pers. comm., 1996). They occur in the Republican River in low numbers (T. L. Wenke and M. E. Eberle, unpubl. obs.), and more information on their status in that stream will be forthcoming as surveys currently in progress are completed.

Overall, the distribution of the plains minnow in Kansas (Fig. 1) has decreased dramatically, especially within the Kansas River system. Our map (Fig. 1) is based on data from the present surveys, historical information summarized by Cross (1967) and Summerfelt (1967), and recent records reported by Cross, Moss, and Collins (1985), Eberle, Ernsting, and Tomelleri (1986), Eberle and others (1989), Haslouer, Cringan, and Fry (1987), KDWP (1979a, 1979c), Luttrell, Echelle, and Zale (1993), and Stark (1990), supplemented by museum records from KU, MHP, and UMMZ. The plains minnow has been extirpated virtually from the Kansas River basin and the main stem of the Arkansas River. It occurs in the Missouri River basin of northeastern Kansas, although plains minnows and western silvery minnows (*Hybognathus argyritus*) regularly hybridize at some localities along the Missouri River (Stark and others, 1987; F. B. Cross, pers. comm., 1996). Results of surveys in the Arkansas River basin in Kansas and Oklahoma indicated a decline in the distribution of plains minnows, although they were collected at several localities in the Cimarron, Salt Fork Arkansas, Medicine Lodge, Ninnescah, and Chikaskia river drainages (Cross, Moss, and Collins, 1985; Luttrell, Echelle, and Zale, 1993). In the Chikaskia River, they were collected only in Oklahoma (Luttrell, Echelle, and Zale, 1993). Given the substantial reductions in the distribution and abundance of plains minnows in Kansas, a general assessment of their status throughout the Great Plains is warranted. With the potential for misidentifying the three species of *Hybognathus,* this study should be supported by museum voucher specimens.

Topeka Shiner, *Notropis topeka*

Included in the KDWP samples for the EPA study were Topeka shiners collected from Willow Creek in Wallace County on 12 June 1995 (MHP 6938). This site on Willow Creek (T13S, R41W, NW¼ sec. 18) is several km downstream from the single site previously recorded for this species on several occasions (T13S, R42W, W2 sec. 11 & E2 sec. 10). Willow Creek remains the only stream in western Kansas where Topeka shiners have been captured since 1947 (Eberle and others, 1989).

Stonecat, *Noturus flavus*

In the South Fork Solomon River south of Osborne (Osborne Co., T7S, R12W, SW¼ sec. 20; 2 October 1994), we captured three stonecats in a riffle

(relative abundance of 5.5%; MHP 7322). Upstream from Waconda Reservoir (located at the confluence of the North Fork and South Fork of the Solomon River) only pre-1915 records (Cross, 1967) and one report by KDWP (1977) exist for the stonecat, and these are on the North Fork Solomon River. Our record from the South Fork Solomon River is the only one known to us from this stream. Infrequently reported from northwestern Kansas, this species is most abundant in the eastern one-third of the state (Cross, 1967; Cross and Collins, 1995).

We also collected stonecats at three of four sites sampled in the Solomon River:

(1) Mitchell Co., T7S, R8W, NE¼ sec. 10; 22 October 1995; relative abundance 1.3%; MHP 7328
(2) Cloud Co., T8S, R5W, SW¼ sec. 17; 22 October 1995; relative abundance 2.5%; MHP 7338
(3) Ottawa Co., T12S, R3W, NW¼ sec. 13; 21 October 1995; relative abundance 2.5%; MHP 7341.

The site where no stonecats were captured was near the mouth of the river, southwest of the town of Solomon (Saline County). The Solomon River seemed to have more areas of rocky substrate than either the Smoky Hill River or Saline River in the same region. No stonecats were taken at any sites in the Smoky Hill River or Saline River, although once they were obtained readily in the Smoky Hill River in Ellis County (T. L. Wenke, unpubl. obs.).

Recently sorted samples at the Sternberg Museum included stonecats from the Republican River in Jewell County (T1S, R6W, sec. 3 & 4; 9 July 1987, MHP 2516), a previously unreported locality for this species (Cross and Collins, 1995). They have not yet been reported from Republic County, but should be expected in appropriate habitat throughout the lower Republican River basin.

Logperch, *Percina caprodes*

Logperch were captured in relatively large numbers (1 to 35 individuals at each of nine sites) in the Saline River during 1969 (T. L. Wenke, unpubl. obs.). They were collected in gravel riffles and in pools. All but two of these localities were in Ellis and Russell counties, upstream from Wilson Reservoir. The other two sites were at the Wilson Reservoir stilling basin and a pool about 1 km downstream from the dam. Attempts to locate logperch in 1969 at five sites in the Saline River in Lincoln, Ottawa, and Saline counties were unsuccessful. Collections of logperch in the Saline River made during 1975 and 1976 were reported by KDWP (1979b), with specimens recorded at one site each in Russell, Ellis, and Trego counties. The Saline River frequently is sampled by ichthyology classes from FHSU, and logperch are

captured on an irregular basis, being absent during most years (T. L. Wenke, unpubl. obs.).

A sample from the Saline River northeast of Hays (Ellis Co., T11S, R17W, S2 sec. 8; 21 July 1994) included one logperch (relative abundance of 0.3%; MHP 2421). We also captured four logperch (relative abundance of 1.4%) in the North Fork Solomon River upstream from Kirwin Reservoir, south of Edmond (Norton Co., T5S, R22W, SE¼ sec. 17; 8 October 1994, MHP 7346)—three in a riffle, and one in a run. Prior to this, we identified logperch sent to us in the fall of 1993 by Don McKee (Phillipsburg High School), who captured them with a throw-net in Kirwin Reservoir. The specimens from the North Fork Solomon River represent the first published records of this species within the Solomon River basin (Cross, 1967; Cross and Collins, 1995). In Kansas, this species usually occurs in the area south of the Kansas River and east of Wichita (Cross and Collins, 1995). Its presence in north-central Kansas is associated with reservoirs (including stilling basin areas) and the reaches of rivers flowing into them. We have not yet located them in rivers near Webster, Waconda, or Kanopolis reservoirs.

Slenderhead Darter, *Percina phoxocephala*

A noteworthy record from the EPA study was the single slenderhead darter captured in Stranger Creek (Leavenworth Co., T10S, R21E, SE¼ sec. 36; 26 July 1994, MHP 6636). This is an abundant species in southeastern Kansas, but it was not known from the Kansas River drainage. Because this record is represented by only one adult fish, it remains to be seen if this species has established a reproducing population within the Kansas River basin.

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