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Fish Distribution in Skunk River Drainage above Ames¹

LARRY V. ZACH²

Abstract. From June 10 to November 17, 1966, 31 species of fish were recorded from the Skunk River above Ames. Length frequencies indicate the seasonal growth of *Notropis cornutus*, *N. lutrensis*, *Pimephales notatus*, and *P. promelas*. Species associated with headwater, riffle, pool and main channel are listed.

A flood-control dam has been proposed for the Skunk River north of Ames. Since such construction would result in changes in the fish distribution and species composition, the present distribution of fish is of particular interest.

The study area consisted of the Skunk River drainage system, Hamilton and Story Counties, from the headwaters to Ames, about 35 miles downstream (Fig. 1). The habitat is quite varied. Many of the headwater and tributary streams are slow flowing and have deep silt bottoms. Farther downstream the creeks are mostly sand bottomed, with some silt and gravel areas. The Skunk River near Ames has riffles, swift and slow flowing stream areas and deep pools. The bottom is sand, silt, gravel, rock or combinations thereof. During dry seasons, many of the streams may have little or no flow, except through the sand. The deeper pools serve as survival habitat for many of the fish at those times (Palooumpis, 1958).

METHODS

Samples were taken from June 10 to November 17, 1966, with a 20-foot common sense minnow seine with ¼-inch mesh. A piece of ½-inch netting was attached to the center of the seine at the bottom so that small young of the year could be taken. An electric shocker was used on several occasions. Stonecats and fantail darters were readily taken with the electric shocker but rarely with a seine. Two species, channel catfish and white crappie, not collected with the seine or shocker, were taken readily on hook and line. These fish were found in deep holes with cover, where the seine and shocker are not very effective.

ANNOTATED LIST OF FISH

Catostomidae

Ictiobus cyprinellus. One 8.5-inch bigmouth buffalo was taken

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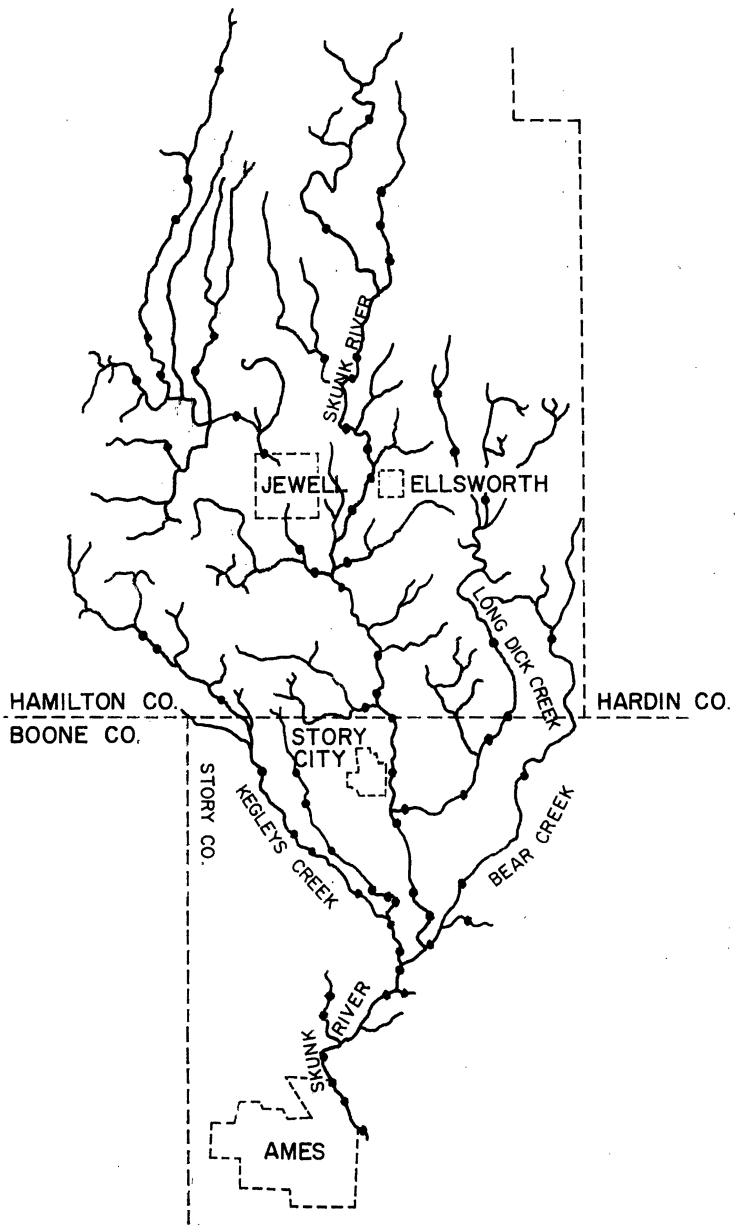


Figure 1. Skunk River drainage above Ames, Iowa, with collection sites marked.

just south of Story City in a shallow sandy area of a large pool above a beaver dam.

Carpiodes sp. Carpsuckers were taken often on the Skunk River as far north as Jewell. Most of the specimens were young and could be identified only to genus. The seine was rather inefficient in taking adults, which were often observed to swim around the net or continue to move ahead of it. Four adults taken were *Caripodes cyprinus*.

Moxostoma macrolepidotum. Three northern redhorse, each about 6 inches long, were collected in clear, moving water over a rock bottom, at one station in the Skunk River near Ames. Forbes and Richardson (1920) found that these redhorse in creeks and small rivers preferred swiftly flowing water and avoided mud bottoms.

Hypentelium nigricans. Northern hog suckers were collected at five stations on the lower Skunk River. The largest specimen was 14 inches, with most from 5-7 inches long. Blatchley (1938) states that these suckers frequent clear running water. Forbes and Richardson (1920) found them abundant in swift and rapid streams, but rare in muddy water.

Catostomus commersoni. The white sucker was common throughout the drainage except in the extreme headwaters. It was usually taken in slow-moving pools, often having a sand or silt-sand bottom with rock areas present.

Cyprinidae

Cyprinus carpio. Carp were taken at only two stations, one near the mouth of Bear Creek and the other on the Skunk River just north of Ames. Carp are more widespread than the samples indicate and are taken by fishermen along much of the Skunk River.

Notemigonus chrysoleucas. Only a few golden shiners were taken at two stations, one on the Skunk River near Story City and the other on a small tributary of the Skunk River.

Semotilus atromaculatus. The creek chub was taken at 85% of the stations sampled and in a wide variety of habitats. The creek chub was one of the few species present in the silt-bottomed dredged ditches of the headwaters, being taken there from June to September 7. A correlation was noted between increase in stream size and increase in the maximum length of specimens taken. Length-frequency distributions indicate a life-span of several years, but individual year classes were not obvious.

Phenacobius mirabilis. The suckermouth minnow was collected in small numbers at five stations, all on the Skunk River, from swift current over gravel or rock.

NOTROPIS CORNUTUS FRONTALIS
SKUNK R. DRAINAGE, 1966
NORTH OF AMES

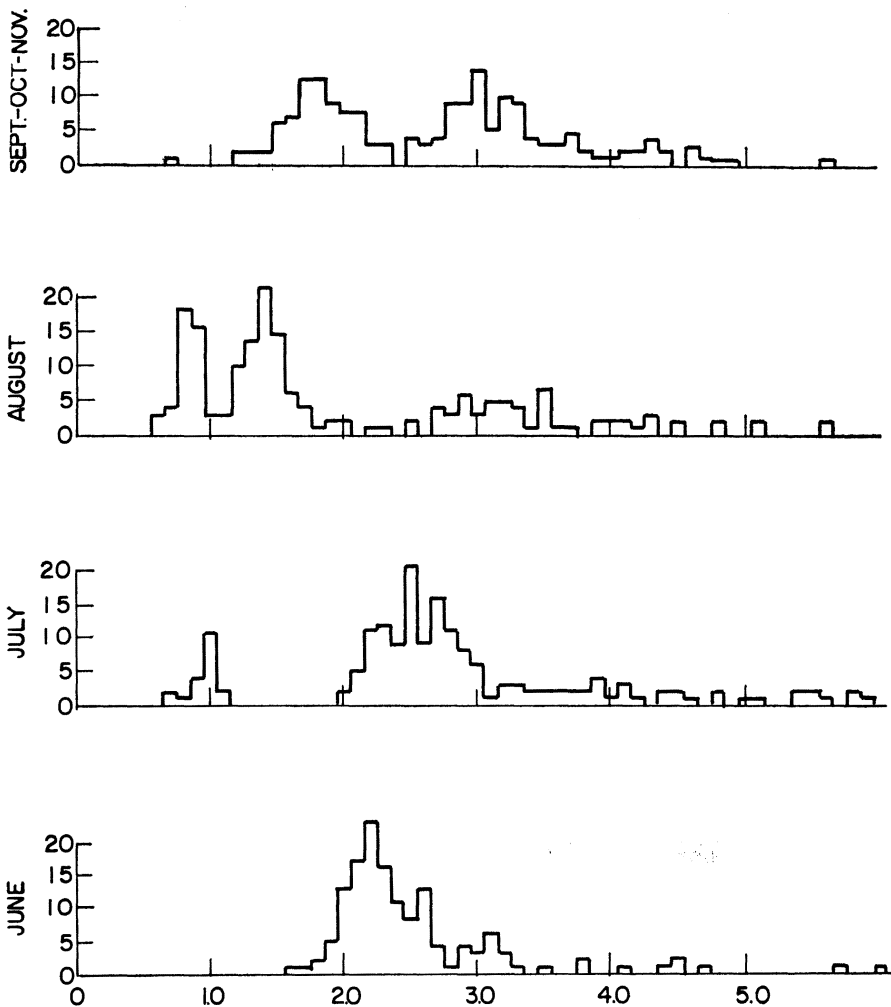


Fig. 2 Length Frequencies of the Common Shiner.

Notropis atherinoides. The emerald shiner was taken at two stations on the Skunk River, near Ames, in swift-flowing, rocky bottomed areas.

Notropis cornutus. Common shiners were abundant throughout the area except in the silt-bottomed, dredged creeks of the headwaters. They showed preference for clear waters and clean bottoms (Forbes and Richardson (1920). The largest specimen was a 6.3-inch male. Length frequency distributions (Fig. 2) give an indication of the first two age classes. In July, class 0 was about 1.0 inches and class I from 2.0 to 3.0 inches. Other age classes are not readily separatable.

Notropis dorsalis. Bigmouth shiners were collected at 96% of the stations and appear to do quite well in a large variety of habitats. Paloumpis (1956) found this the most abundant species in Squaw Creek. The central bigmouth shiner is taken quite effectively with a minnow seine because it is common in the open water and is not large enough to escape with the speed of some other species. The maximum total length was 3.5 inches though few exceeded 3.0 inches. Young-of-the-year, measuring 0.9 inches, were taken from the middle of July until the middle of October.

Notropis lutresis. The red shiner was taken in fairly large numbers in some areas on the Skunk River and several of the large tributary streams. Paloumpis (1956) found it the second most abundant species in Squaw Creek. Young, measuring 0.9 inches, were taken from late July to mid-November (Fig. 3). Paloumpis (1956) observed male red shiners in breeding condition in Squaw Creek as early as April 27 and as late as mid-August.

Notropis stramineus. The sand shiner was collected commonly on the Skunk River and several miles up one of the major tributaries, usually in pools with a sand and rock bottom. Paloumpis (1956) reported this species as rare in Squaw Creek, collecting it only from areas with sand-silt bottom. Young, measuring 1.0 inch, were taken on August 10, September 7, and November 17. Most adults were from 2.1 to 2.8 inches with the largest being 2.9 inches.

Hybognathus hankinsoni. The brassy minnow was taken in small numbers on the Skunk River and in several of the tributaries. It showed habitat preference for pools with sand-silt or sand-gravel bottom, often with cover present. Harlan and Speaker (1956) reported it as a fish of moderate sized streams of small rivers and being common in pools adjacent to these. A single specimen, identified as a brassy minnow X creek chub cross, was taken in a small tributary to Bear Creek (Table 1).

NOTROPIS LUTRENSIS
SKUNK R. DRAINAGE, 1966
NORTH OF AMES

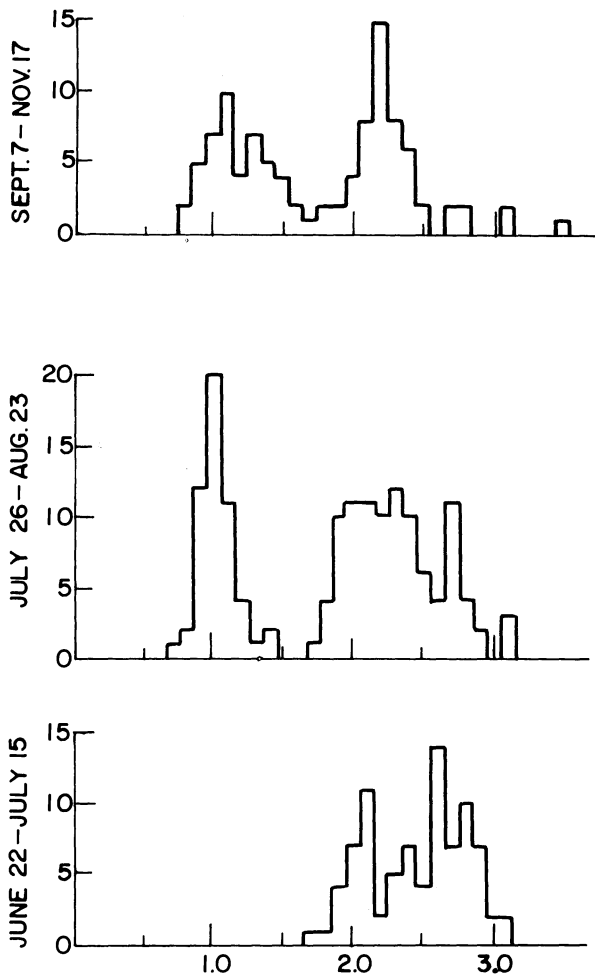


Fig. 3. Length Frequencies of the Red Shiner.

This specimen is in the Iowa State University fish collection. Further collections at this station secured no more hybrids.

Table 1. Some measurements of a suspected hybrid and of three specimens of each of the parent species.

	Brassy minnow	Hybrid	Creek Chub
Pharyngeal teeth	4-4	4-4	(1-2),(4,5)-4, (1-2)
Lateral line scales	35-39	44, 45	52-58
Scales above lateral line	6-7	7	9-11
Scales below lateral line	4-5	6	7
Barbel	absent	absent	present
SL/HL	3.80	3.75	3.52
SL/Sn to D	2.0	1.9	1.7
A to C	4.2	3.8	3.7
HL/E	4.4	4.4	4.5
HL/JL	9.1	5.1	4.1
HL/BD	1.5	1.5	1.6
SL—standard length		C—caudal fin	
HL—head length		E—eye diameter	
Sn—snout		JL—jaw length	
D—dorsal fin		BD—body depth	
A—anal fin			

Pimephales notatus. The bluntnose minnow was taken at over half the stations. It showed a preference for quiet pools with sand bottom and was absent from the silt-bottomed headwaters. Paloumpis (1956) found this species common in areas with a sandy bottom and clear water. Small young were taken from June through mid-November, indicating a prolonged spawning season. A number of fish measured as much as 3.5 inches. Length-frequency distributions on the bluntnose minnow (Fig. 4) indicate the presence of three age groups in July. In the latter part of July a tuberculate, 3.6-inch male bluntnose was discovered guarding a nest. The nest, approximately 5 inches long, had been dug out under a flat rock on a coarse sand bottom. The male was very reluctant to leave and when forced away, swam back and forth in front of the nest for a minute or two and then returned.

Pimephales promelas. The fathead minnow was widely distributed over the area, except in Kegley's Creek. This stream is mostly swift flowing with a sand or gravel bottom. The fathead showed a preference for slowly moving water over a silt bottom. It was especially abundant in the headwaters where ditches had been dredged, resulting in slow moving to stagnant water over a deep silt bottom often with much filamentous green algae present. Paloumpis (1956) collected this species from areas where the water was muddy and the flow of current was not too great. Forbes and Richardson (1920) in Illinois recorded the fathead minnow as frequenting muddy waters with a mud bottom and slowly moving streams.

PIMEPHALES NOTATUS
SKUNK R. DRAINAGE, 1966
NORTH OF AMES

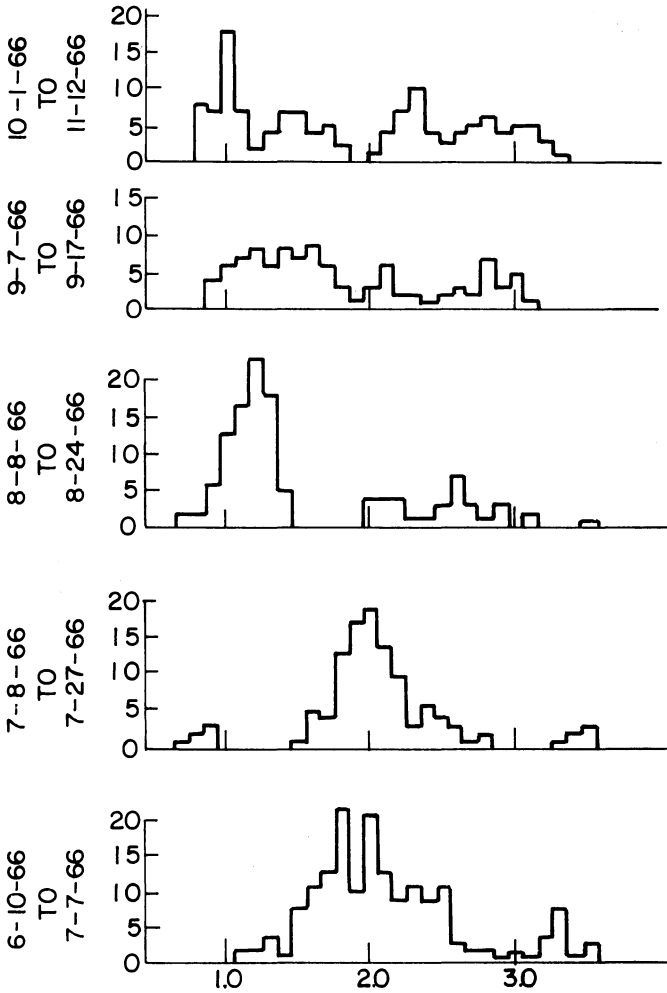


Fig. 4. Length frequencies of The Blunt Nose Minnow.

In September, many of the small streams dried up except for occasional pools. From one of these containing less than a gallon of water, more than 100 fatheads and 20 bigmouth shiners were taken. Many of the bigmouth shiners were already dead while the fatheads were doing well.

Adults in breeding condition were taken from early June, when sampling started, until late July. Small young were collected in July, August, September, and October. Length-frequency distributions (Fig. 5) indicate a 2-year life cycle.

Campostoma anomalum. The stoneroller was taken commonly throughout the area except in the headwaters. It has a preference for clear, swift water over a sand to gravel or rock bottom.

Ictaluridae

Ictalurus punctatus. No channel catfish were collected with the seine, but several were taken by angling from some of the larger pools.

Ictalurus melas. Black bullheads were taken in many of the stations on the Skunk River near Ames and in three instances in large pools far up small creeks. They were usually in stagnant pools with sand or silt bottom.

Ictalurus natalis. Yellow bullheads were collected at three stations near Ames on the Skunk River.

Noturus flavus. Stonecats were taken at three stations in clear, swift-flowing riffle areas.

Centrarchidae

Micropterus dolomieu. Smallmouth bass were taken commonly in the Skunk River near Ames and in lower Bear Creek during high water. They prefer pools below large riffles and the deeper parts of the stream where cover is present. The seine seemed rather inefficient in collecting the smallmouth as bass would often swim around or jump over it. The largest specimen was a 13.6-inch female, though most were from 5 to 7 inches long. Young-of-the-year were first taken on August 8.

Micropterus salmoides. Only one largemouth bass was collected, with an electric shocker at Soper's Mill. The bass might have originated in a farm pond.

Lepomis cyanellus. Green sunfish were collected commonly in the Skunk River. They prefer pools where rocks, logs, concrete slabs, or other cover is present. Several fish were identified as green sunfish X orangespotted sunfish hybrids.

Lepomis macrochirus. Bluegill were taken at only one station, just north of Ames on the Skunk River. They may have been artificially introduced from surrounding farm ponds which are often stocked with this species.

PIMEPHALES PROMELAS
SKUNK R. DRAINAGE, 1966
NORTH OF AMES

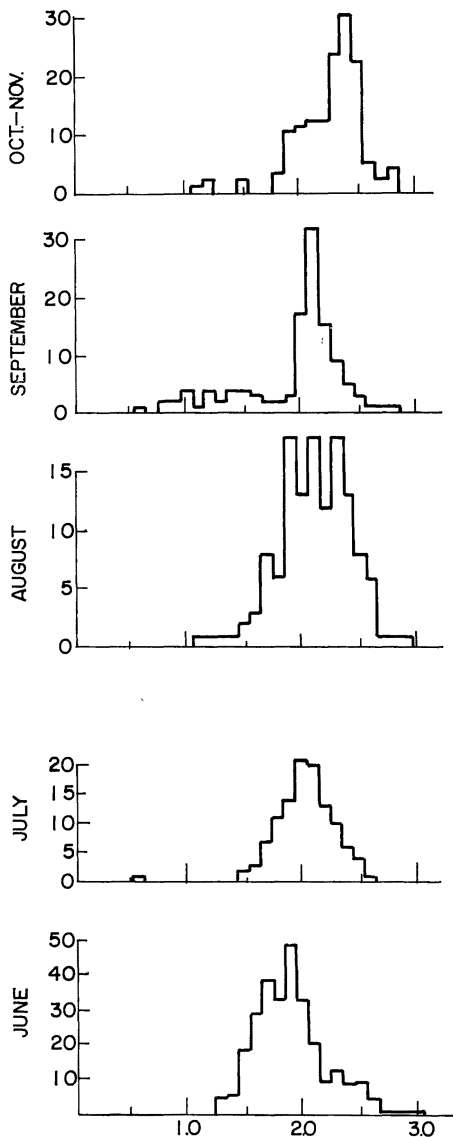


Fig. 5. Length Frequencies of the Flathead Minnow.

Lepomis humilis. One orangespotted sunfish was collected on the Skunk River near the Story and Hamilton county line during low water.

Pomoxis annularis. The white crappie was taken at only one station with a hook and line in a deep pool. It was found at one station near Ames between 1888-1948.

Percidae

Percina maculata. Only one black-sided darter was taken; it was collected with a seine over a gravel bar at Soper's Mill. This darter is usually found in streams and rivers of moderate to large size (Harlan and Speaker, 1956; Blatchley, 1938).

Etheostoma nigrum. Johnny darters were the most common darters, being found at 40% of the stations sampled. Usually only a few were taken at a station but 33 were collected in a pool near the upper reaches of Kegley's Creek. Though the Johnny darter shows a preference for riffle and stream areas of over gravel, it was collected in most of the habitats encountered and seemed to be quite adaptable. It was taken most often in Kegley's Creek which has more swift flowing areas between pools with gravel bottom than the other streams sampled. The largest specimen taken was 2.9 inches.

Etheostoma flabellare. Fantail darters were taken at only two stations on the Skunk River and three on Kegley's Creek. They appear to be restricted mainly to shallow riffle areas with gravel or rock bottom.

DISCUSSION

From June 10 to November 17, 1966, seining with a 20-foot seine took 29 species of fish from the Skunk River system above Ames. In addition, channel catfish and white crappie were taken by angling only. Yellow bass, *Roccus mississippiensis*, were observed being dumped into Skunk River when water was pumped from a quarry, but there is no evidence that they became established.

The following species were not reported for these waters by the Conservation Commission between 1945 and 1956 (Harlan and Speaker, 1956) but were reported prior to that time: bigmouth buffalo, suckermouth minnow, yellow bullhead, largemouth bass, white crappie, and emerald shiner. The last species was also taken by Paloumpis (1956) from Squaw Creek which enters the Skunk River just below Ames. The following species, not taken in 1966, were reported as taken from these waters from 1945 to 1956 (Harlan and Speaker, 1956): river carpsucker, highfin carpsucker, golden redhorse, slender madtom, silver chub, hornyhead chub, blacknose dace and spotfin shiner.

The headwaters at the northern part of the study area are mostly slow-flowing, dredged, drainage ditches with silt bottom. The typical species of this area are the fathead minnow, bigmouth shiner and creek chub. The smaller tributaries at the upper reaches of Bear Creek, Long Dick Creek, and Kegley's Creek are more rapid flowing and have a sand bottom. Species taken commonly in this area are the bigmouth shiner, common shiner and bluntnose minnow.

The remainder of the system is mostly stream and pool areas with occasional riffles. Typical forms of the stream areas are the bigmouth shiner, sand shiner, common shiner, stoneroller and bluntnose minnow. Pool areas were inhabited by black and yellow bullheads, channel catfish, white crappie, green sunfish, common shiner, creek chub and fathead minnow. Species taken only in riffle areas were stonecat, suckermouth minnow and fantail darter. Species common in riffle areas but not limited to this habitat include: bigmouth shiner, stoneroller, creek chub, bluntnose minnow and johnny darter.

The following species were found only in the Skunk River just north of Ames: channel catfish, largemouth bass, bigmouth buffalo, hogsucker, white crappie, emerald shiner and suckermouth minnow.

The section of the river below Ellsworth was devoid of fish in July and August when untreated wastes polluted the stream. The bigmouth shiner and creek chub were the first fish in the recovery area, about one mile below the pollution source.

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