



Little known, little appreciated, the “minnows” of Kansas are varied—and beautiful.

Little Fish

Ken Brunson

People have a peculiar attitude when it comes to small native fish—especially ones on threatened and endangered lists. They seem to either sympathize with protecting little fish but are embarrassed to say so or, more often than not, are enraged at the thought of a tiny fish holding up a billion-dollar pork barrel project for some senator's narrow interest constituents. Con-

The southern redbelly dace shown here are just beginning to round into breeding condition. At the height of breeding season, the males' undersides are intensely red. (Photo by Ken Brunson.)

troversies that pit a miniscule fish against progress by man and machine are a sensationalistic writer's dream—just look at the press coverage the Tellico Dam episode attracted. Anyway, it naturally develops that many of our rare fish are small organisms that occupy an inordinately large place in the emotional rhetoric of pro and con water project debates.

Actually, most of us show a strong tendency to scatter all fish from one end of the Bo Derek scale to the other. Largemouth bass, of course, fall out toward the "ten" side, the

macho man's kind of animal but not even bass seem to rank with more popular life forms. A recent natural resource report with an anti-hunting slant stated that, besides "shooting only with a camera, it's all right to fish, but please don't pick the flowers." And then there are the vegetarians who carefully substitute fish for "real meat." Smaller fish like our native minnows seldom get any public attention or support at all.

A recent poll of National Wildlife Federation members revealed that some thought that lower life forms might be dropped from the national



threatened and endangered species lists. They seemed to feel that plants, insects, and fish were somehow less important than bald eagles and blackfooted ferrets.

The main stream of society rarely encounters little fish except as bait or in the center of controversy since they are always hidden from view beneath the water's surface. There is no "Greater Wichita Fish Watchers Society," no rabid "minnowers" working on their life lists. To remedy this situation, we've pulled some of these small fish from their hideouts to introduce you to their



fascinating traits and virtues.

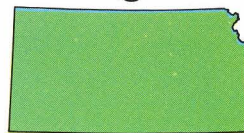
But, first, a few general facts are in order. There are about 130 species of fish in Kansas, according to Dr. Frank Cross, University of Kansas, of which more than half can be considered small fish—less than eight inches adult length. Most of these species can be found in the large minnow family which also includes the common carp and goldfish—both introduced species. Breaking these seventy or so species down, we find about twenty darters of the true perch family which also includes walleye and the now famous snail darter. There are eight chubs besides the common creek chub, about twenty shiners, six madtoms that aren't really mad but look like small bullheads, a couple of topminnows, several other species of minnows closely associated with fatheads (a common bait minnow), and an assortment of rather unique fish such as the red-bellied dace, brook silverside, and banded sculpin. Of course, all fish, even a ten-pound bass start out small, so you may occasionally run into these infants of the fish world. Most of these Kansas fish are well adapted to streams and evolved in a natural plains setting devoid of the abundant lake- and pond-filled environment we know today.

The shiners are perhaps the best known group of minnows. Excepting the golden shiner, these are all from one genus (*Notropis*) and include the red shiner which is probably the most common fish in the state. The Topeka shiner (*Notropis topeka*) is one of our state's threatened species and is running as a candidate for the state fish along with the channel catfish. There is a whole assortment of other less distinguished shiners—the bigeye, big-mouth, sand, river, ghost, blacknose and bluntface. With so many kinds in one group, it is difficult for even experts to sometimes tell which species they're looking at without the help of an identification key such as "Fishes in Kansas" by Dr. Frank Cross and Joseph T. Collins pub-

lished in 1975.

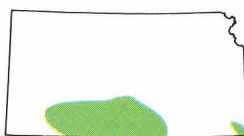
The darters are probably the most inconspicuous fish because they normally rest on sand or gravel bottoms of streams and are not easily captured with a seine. As their name implies, they dart about in quick movements interrupted by motionless rests on the stream bottom, perching on their front lower fins as if ready to pounce on any small morsel of food that may float by. Most darters are known to eat mainly small aquatic insect larvae. The species of this family display more brilliant colors than any other group of Kansas fishes. All the colors of the rainbow can be found in the several members of this group in Kansas including the greenside, banded, speckled, redbfin, Arkansas, orangethroat, and fantail darters.

Orangethroat darter



It amazes me to continually encounter local residents who have fished a stream for years and have never seen orangethroat darters that occur quite commonly in these very waters. This is not so surprising, though, when you consider the habits of this fish. Despite its unique colors and form, it is not an easy fish to see or seine. Like most other darters, the orangethroat stays on the bottom, motionless, until it "darts" to catch food or escape predators. It perches on its front lower fins and can cock its head from side to side to watch for potential food and other distractions from its lower vantage point in the stream. The orangethroat darter is found nearly statewide and occurs in a variety of stream types, but is more common in smaller sand- or gravel-bottomed creeks.

Arkansas darter

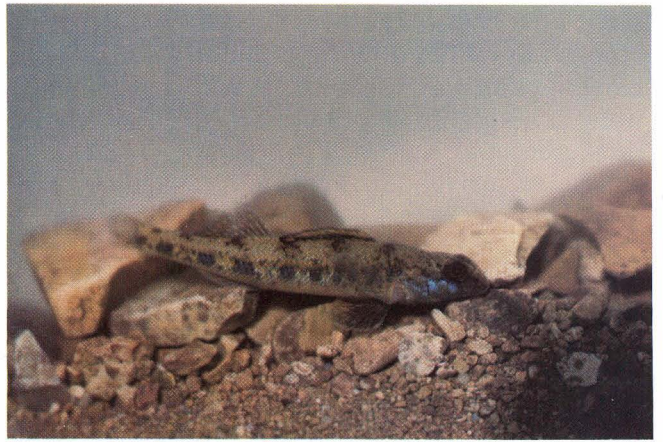


This Kansas threatened species is a rebel. It prefers not to

the darters

(Clockwise from near right) Orangethroat, logperch, speckled, channel, banded, and Arkansas. As exemplified in these portraits, Kansas darters are quite colorful. They are not prone to flaunt their appearance, however, since they discreetly skip about the bottom sand and rocks, feeding on such fare as mayfly larvae. They are well suited for life on the bottom, since they do not possess gas bladders and have highly adapted fins on which to rest. Adult Arkansas darters are exceptions; they typically prefer to perch in branches of aquatic vegetation. The logperch is the largest member of the darter group, attaining an amazing total length of over seven inches. (Photos by Ron Spomer.)





rest on the bottom of streams but is closely associated with aquatic plants—particularly water cress and water primrose. In its primary range in southcentral Kansas, it is found almost exclusively in fairly clear, spring-fed creeks that have an abundant supply of the yellow flowered water primrose. In the aquarium, I have witnessed this fish resting in the branches of the primrose, waiting for food, while ignoring the more typical bottom sand and rocks preferred by the other darters like the orangethroat. As with the other darters, the male Arkansas becomes much more brilliant during its spring breeding season, displaying a bright yellow-orange along its entire belly.

Red shiner

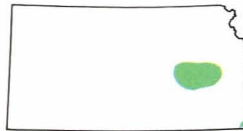


The red shiner is probably the most common fish in

Kansas. It is found in both streams and slack waters of ponds and lakes. A very prolific species, it provides ample forage for a host of predatory fish including largemouth bass. As with many other fish, the Red Shiner has a sheaf of colloquial names. In at least the western part of the state,

locals call this minnow the “red-horse,” although it is probably more commonly known as just “shiner.” The “shiner” available in most bait shops is actually the “golden shiner” and is not the same species. Red shiners seem to be tolerant of a wide range of environmental stresses and this, plus the fact that they spawn from spring to fall, accounts for their wide distribution. Their name is derived from the brilliant red color of the males’ fins in late spring and summer as they “color up” to attract mates for their courtship activities. During this period, they also take on a light blue metallic sheen on their sides.

Duskystripe shiner



Of all Kansas little fish, the duskystripe shiner may un-

dergo the most marked appearance change from its normal coloration to its spring breeding adornment. Most of the time this fish is fairly drab, displaying only gray-olive and white colors along with its characteristic gold horizontal line about midway down its sides, but in April or early May the male changes into a spectacular suitor for the unaltered fe-

males. Anxious to compete aggressively for the lady shiners, the males turn crimson as they initiate spawning activities over large gravel riffles. As do many other species, the males develop tubercles or pointed bumps on their heads to help them fend off intruders to their territories. The duskystripe shiner is one of those Kansas fish that have an irregular distribution. They are found in Chase, Lyon, and Coffey counties in the Flint Hills but also in Shoal Creek and Spring River in Cherokee County. It is not unusual to find more and different species of fish in the biologically rich portion of southeast Kansas but occasionally a species found there may have a limited and isolated occurrence elsewhere in the state. This small fish is also a good representative of a class of animals biologists refer to as indicator species. It is usually found only in clear, relatively unpolluted water that flows permanently, thus “indicating” a healthy environment. When certain streams that are normally free of pollution become altered, or affected by contaminants, indicator species such as duskystripe shiners are the first fish to disappear.

Slender madtom



There is a group of small bullhead-like fish in the cat-

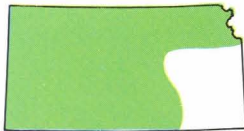
fish family that, when seined up by bait-seeking anglers, are quite commonly mistaken for young bullheads. These are the madtoms of which the slender madtom is representative. It is hard to imagine that these fish, which rarely grow to more than a few inches in length, are in the same family as the blue catfish and flathead catfish either of which, at adult size, could gulp a bucket full of madtoms at one feeding. The other madtoms include the stonecat (the most common); the tadpole; brindled; freckled; and Neosho madtom, a Kansas endangered species. A peculiar feature of the mad-

Plains killifish (Ken Brunson)



toms is the mild irritant exuded by the spines on the side and back fins. This is not a toxic venom but can cause the fleshy part of the hand between the thumb and index finger to ache noticeably after being “punctured” by the stiffened spine tactic used by these small catfish when you’re trying to coax them from net to hand to minnow bucket. Unlike some of the minnows, these fish retain about the same coloration throughout the year. Like his small cousins, the slender madtom is secretive, hiding in the rocks of riffles to come out only to snatch an insect larvae or other minute parcel of food.

Plains killifish

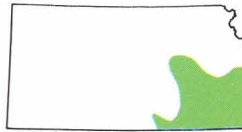


The plains killifish is the “exception to the rule” for it

exhibits characteristics in its biological needs quite apart from the rest of the subjects of this story. While it, too, bears other common names such as “tiger minnow” and “zebra fish,” this eccentric of the stream fishes is in the topminnow family which in Kansas contains only one other noteworthy cohort—the blackstripe topminnow. The killifish is special because, unlike so many other Kansas fish, it is found everywhere in Kansas *except* the southeast section of the state. Some fish species thrive only in pristine water conditions; this species takes up the slack at the other end of the indicator scale. It survives in the main part of the stream current and also in the slack water areas and is very tolerant of certain extremes in water quality properties. Like the large, fighting striped bass, this fish can live in relatively salty water. In fact, during an extensive fish kill in the Medicine River in Barber County in 1981 due to very concentrated brine spilled from an oil drilling accident, the only fish found alive a short distance downstream from the insurgence of saltwater were numerous individuals of this species found scurrying

about in shallow pools on the edge of the brunt of the pollution. And, when the water returned to normal guess which species of fish had the stream almost to itself? The plains killifish has other attributes, though. It is used as a bait minnow although is isn’t quite as popular as fatheads and shiners and, being a “topminnow,” it characteristically lingers immediately under the water’s surface to snatch floating insect prey. In fact, it may be an underrated mosquito larvae control organism.

Blackstripe topminnow

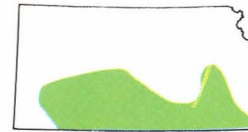


The other common topminnow in Kansas is the

blackstripe topminnow which inhabits that part of Kansas that the plains killifish avoids. This more colorful topminnow exhibits similar feeding habits to the plains killifish but there the similarity weakens. The name points out the most striking feature of this fish, the broad black stripe extending from its mouth to its tail. Being a little more selective in its habitat, the blackstripe topminnow prefers fairly clear

water and is rarely found in main-stream currents. It is a rare sight to catch one of these males in top breeding form, with its iridescent light blue flanks.

Mosquitofish



The mosquitofish, or “Gambusia,” is the Kansas

wild guppy. It is the only fish in the state that bears its progeny as free-swimming young, skipping the egg laying stage. According to Dr. Cross, the leading midwest expert on small fish, the mosquitofish is probably not as important in mosquito control as its name implies, especially when compared to the topminnows. This is a very productive fish, rearing several broods of young through the summer. It is a common resident of stillwater pools in streams of southern Kansas and does not tolerate cold weather well. Larger individuals display a subtle but pretty blue on their sides. Like most small Kansas fish, mosquitofish seldom live longer than two years and, if produced early enough in the first year of their life, can grow to reproduce that first summer. The male *Gambusia* is markedly smaller than the

Brook silverside (Ken Brunson)



the shiners

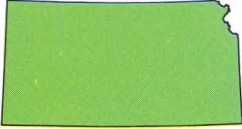
(Clockwise from near right) Redfin, red, bluntface, rosyface, and dusky stripe. The shiners fill an important role in the aquatic food chain by serving as forage for many species of sport fish. Like most minnows, shiners have sets of pharyngeal teeth in their gills which filter nourishing microscopic plants and animals from the water. All of our Kansas shiners are relatively small and are found in various species combinations, depending on the types of habitat encountered. Most of the names for these fish originate from the appearance of the male of the species during their breeding seasons. (Redfin and red shiner photos by Ken Brunson; all others by Ron Spomer).





female and has a lower fin adapted to aid sperm transport in the mating act.

Fathead minnow

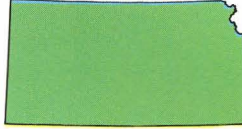
 The fathead minnow is probably the most widely used bait fish in Kansas. Whether imported from outstate hatcheries or obtained locally, this hardy fish is usually sold according to size from seventy-five cents to \$2.00 per dozen in marinas and bait shops across the state. Fatheads are known by such aliases as “Minnesota blacks,”

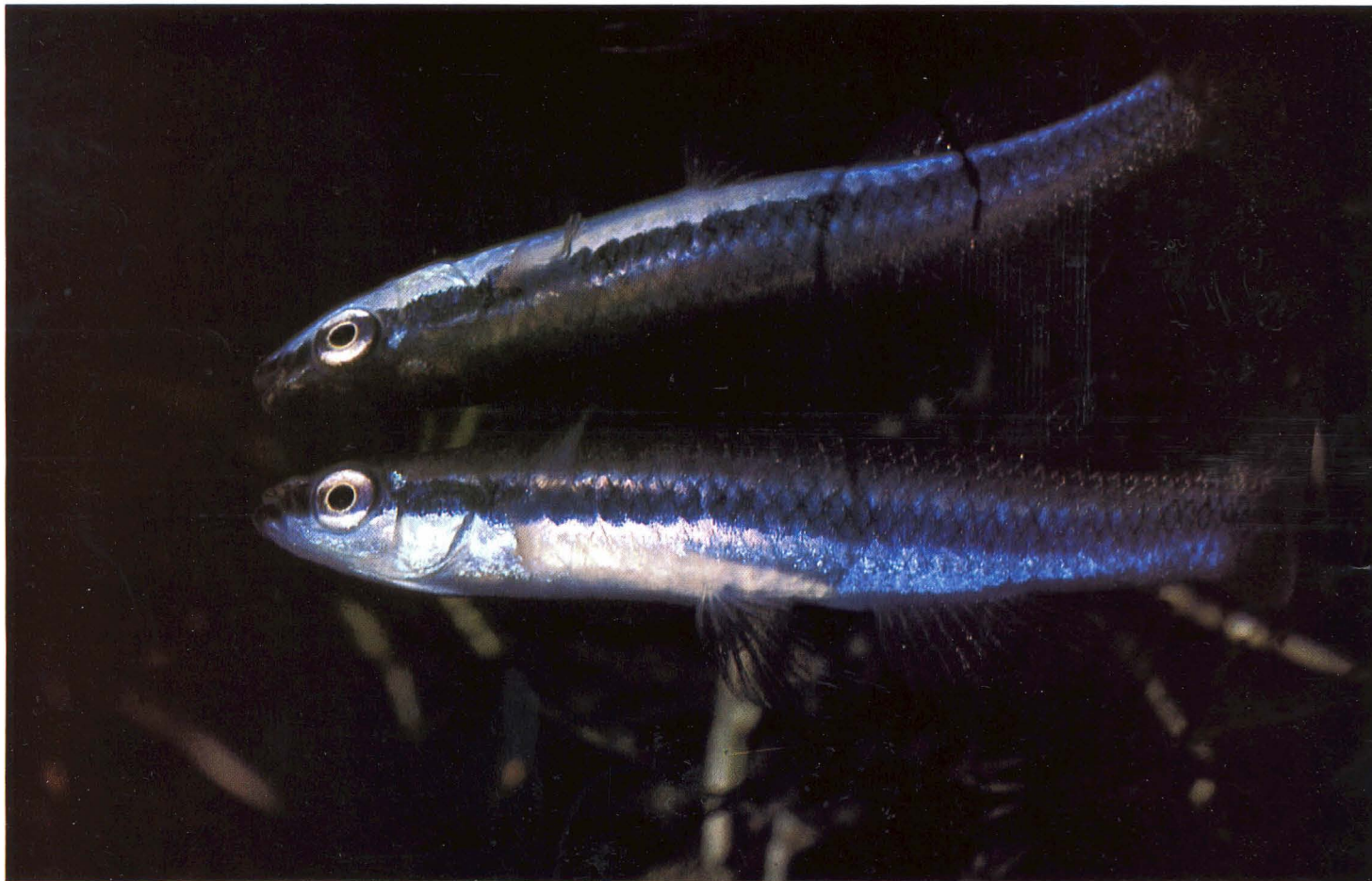
As the name implies, the blackstripe topminnow spends much of its time right at the surface where its image is often reflected when seen from below. The central stoneroller (right) shows the tubercles common to breeding males in a number of species of small fish. (Photos by Ken Brunson.)

“chubs” or just plain “crappie minnows.” The popularity of this minnow is not only related to its ability to live a long time on a hook but also to its promiscuous spawning abilities and ease of culture. Dr. Bill Pflieger reports in his book, *The Fishes of Missouri*, that a female fathead minnow “. . . may spawn twelve or more times in a single summer and produce 4,000 or more offspring.” An amazing production record by anyone’s standards. Other factors that contribute to this fish’s success include an extended spawning season (April through August) and its tolerance to a wide range of water conditions. The fathead is a filter feeder just like the shiners but also takes in significant amounts of algae and other plant materials along with some aquatic insects. Dr. Cross classifies this species as a “pioneer” fish since it is one of the first “to invade intermittent drainage channels after

rains, and it commonly progresses upstream into farm ponds via their spillways . . . one of the last species to disappear from small, muddy, isolated pools that remain in stream channels during droughts.” During peak spawning periods the male fathead develops tubercles on its head and distinctive dark brown and black bands on its sides.

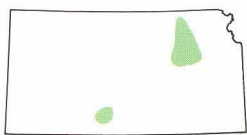
Central stoneroller

 Believe it or not, the central stoneroller actually does “toss” small grains of sand and gravel aside during its pre-spawning activities. I have observed numerous large six- to eight-inch males busily routing sand in their nest preparation and very aggressively defending their own micro-territory with swift side attacks using their grossly-adorned head armored with



menacing pointed tubercles, to best advantage. Male stonerollers get quite attractive in their breeding colors, especially the back fin which has bands of brilliant dark orange interrupted by black bands. The whole body picks up on the orange emphasis making the entire fish an unquestionably attractive specimen for the females he spends so much energy courting. This species is very common throughout Kansas and spawns usually from March to May.

Southern redbelly dace

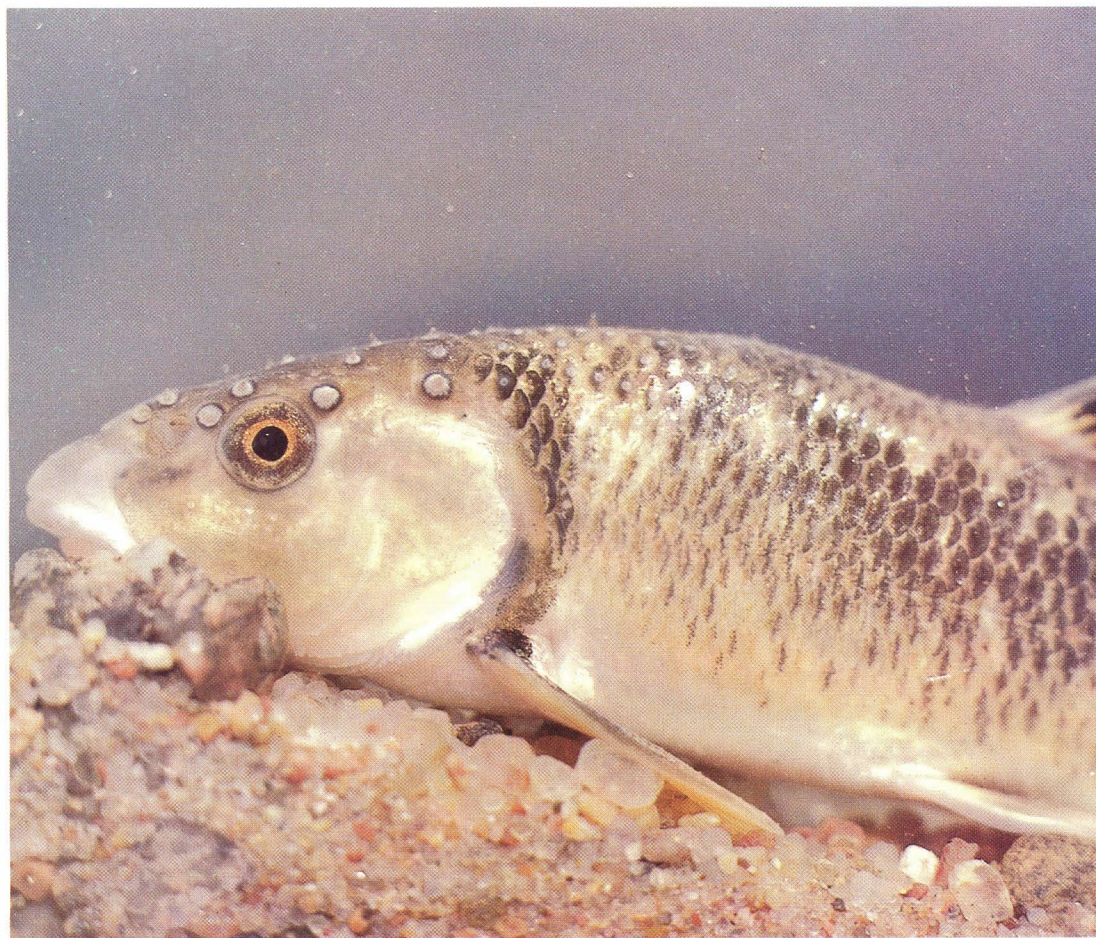


This is another good example of an indicator species.

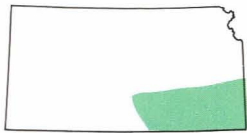
The southern redbelly dace prefers relatively clear, unpolluted streams and is caught many times right next to a spring or groundwater seepage.

The male dace becomes an absolute knockout when in peak breeding form competing for available females in early spring. Their fins are pleasant light yellow; their gold side stripes are set off by two dark lines from nose to tail and their whole underside turns a crimson red. Few other fish reach this height of brilliant coloration. The range of this species is split between its major distribution in the Flint Hills streams of Wabaunsee, Geary and Pottawatomie counties to a lesser isolated area in southern Pratt and Kiowa counties. The latter area is about 150 miles from Mill Creek, west of Topeka, where southern redbelly dace abound, and may represent one of those repeated cases of "minnow bucket" range extensions, the result of human interference. This dace seems intolerant of certain stream disturbances and, since it appears closely associated with a natural resource often greedily eyed

by man—clear, clean, spring-fed creeks—it seems natural to cast an alarmed glance at this fish's distribution even though it currently is not on the state's threatened and endangered species list. As Dr. Cross has remarked, "Unless the remaining springs are preserved in their natural state, undisturbed by livestock or by cultivation of adjacent lands, this handsome fish may disappear from Kansas." Normally, dace live but a few summers. However, in at least one case, an individual kept in an aquarium by Dr. Don Distler at Wichita State University lived almost eight years, and, when the fish finally succumbed to old age, it revealed three or four more yearly growth rings in its scales laid down before it was initially caught and domesticated. The nearly twelve years tallied by this single fish had to be some sort of record and is certainly well above the normal life span for the species.



Brook silverside



“Different” is about the best way to characterize

this fish. It is similar to the topminnows in that it feeds near the surface of the water, but it has an entirely different body form. Its streamlined shape is adapted to fast water but, surprisingly, the silverside is found in sluggish stream pools and some ponds and lakes of southeast Kansas. When seen in the water, it appears almost transparent; its bones and some of its internal organs are visible. Its name refers to its most obvious color pattern—a striking silver stripe along its side. The brook silverside also has a pretty light green in its back. The beak-like mouth is excellently formed for slurping prey insects from the water’s surface. The Kansas Fish and Game Commission has experimented with a close relative of this species, the Mississippi silverside, to determine its ability to provide abundant late year forage for young walleye, white bass and other game fish. Another interesting feature of this critter is the manner in which it carries its forward fins. In normal swimming motion, the fish seems to use these pectoral fins like wings, gently altering their pitch as if to control vertical roll, reminiscent of the way in which salt water flying fish utilize their greatly

exaggerated fins for gliding short distances above the ocean’s surface. Silversides are very attractive fish but also very sensitive and do not tolerate handling and transportation well. For this reason, they don’t adjust well to aquarium life.

Since there is a growing interest in keeping native fish in homes, which of these species do make good aquarium fish? Orangethroat darters make surprisingly good aquarium pets. An aquarium kept for freshwater tropical fish at room temperature suits these darters just fine although they do better in water temperatures lower than seventy-five degrees. They are very interesting to observe and tame quickly on a diet of frozen brine shrimp, dried tubifex worms and even a little flaked fish food. They keep their colors better in cool water even though they will never approach the brilliance seen in their natural habitat. If darters are kept, the aquarium hobbyist should provide a natural sand and gravel substrate. This bottom may not look as pretty as red and blue rocks but will provide a still pleasing natural setting for owner and fish alike. Red shiners also make great aquarium fish. If you obtain good sized males, they are colorful, inexpensive, and easily tamed although they are more excitable than darters. Redbelly dace are a little harder to come by but can provide a colorful addition to your native fish complement; however,

like darters, dace do better on a diet of brine shrimp. Plains killifish and blackstripe topminnows both make good aquarium pets and, like any shiners, they can be fed plain flake food. Mosquitofish also eat flake food and, along with the topminnows, provide a good complement to the shiners and darters since they hang around the upper parts of the tank. Another addition might be the slender madtom, which provides an interesting contrast to the rest of the aquarium life with its whiskers and its fluid snake-like swimming. All of these species will feed voraciously on brine shrimp. As with any other aquarium, the tank of little fish should not be overstocked. As a general rule of thumb, no more than one individual small minnow per gallon of aerated water is a safe limit, and proper water quality maintenance care should be observed.

Just what is important about little fish? What value do they have? I hope you’ve at least noticed the diversity of colors, habits, and forms of the highlighted species. There are dozens of species we haven’t considered—some with just as much to recommend them. Some of these fish are very useful in telling us what shape our environment is in. Others are more noticeably important as bait minnows. The fathead minnow and shiners are an important food source for scores of predatory species higher in the food chain, besides providing monetary returns for many bait dealers. For some of us, though, it is pleasing enough to know that, in spite of various pollution problems, massive water development projects and dams, and general stream alteration, there are still some places in Kansas you can go to see and experience a rich, diverse native fish fauna that few people know. Efforts made to preserve these native organisms out of respect for the natural history of Kansas always say something positive about our conscience and implies a distaste for a monotonous, sterile environment. □

Fathead minnows (Ken Brunson)

