Fishes of Green River

By Glenn W. Murphy

A Study of Upper Green River
in Casey and Lincoln Counties, Kentucky

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TO MY WIFE AND SONS:

JANICE, KIM AND KEVIN

Contents

Introduction

As I grew up I often wished that there were some reference available which dealt with the fishes and other animals I saw as I walked along the banks of Green River. I spent a lot of time on these riverside walks and I saw many different kinds of fishes swimming along just under the surface of the water. I could never find out what their common names were, and certainly not their scientific names. I checked the library and found that it did not contain any books which would give me the names of these fishes. I could find no books which dealt with the animals of Kentucky.

Since these walks, I have become increasingly more interested in nature and have devoted a considerable portion of my college studies to the biological sciences. I have taken as many special problems courses as I could and in these I have studied Kentucky. I have studied both the plant and animal life and I hope to write about all of these at some later time. However, this book will be devoted entirely to a treatment of the fishes.

This book is the result of a desire on my part to enable any interested child of this state to know what fishes swim in his streams. Since we are biologically comparable to many other parts of the state, this treatment might also be of interest to residents of other river basins.

I would like to thank the people with whom I have been associated who have encouraged me to continue my studies, particularly my teachers and my parents. Without the encouragement of these teachers, I would not have developed the interest I have in natural history. Without the moral and financial support of my parents, I would not have been able to pursue this interest.

I wish to acknowledge the help which has been given me in this study. I was equipped and directed by Dr. Robert Kuehne, Professor of Zoology at the University of Kentucky. The specimens which are discussed were collected with the assistance of Harry True, James Hargis, Pete Foster, Walter Daugherty, and Gary Rousey. I am also indebted to the Kentucky Department of Fish and Wildlife Resources for the collecting permit and supplementary information which were provided.

Drawings are from **How to Know The Freshwater Fishes** by Dr. Samuel Eddy, published by Wm. C. Brown Company, Dubuque, Iowa.

It is my hope that this simple treatment of the fishes of our streams will be available to any and all of the children of our region who love nature.

A special note of thanks is extended to Miss Beth DeRossett for the fine work she did in preparing this manuscript for publication.

A Year's Collecting

During the summer of 1962, I was a laboratory assistant to the teachers of the National Science Foundation Biological Sciences Program at the University of Kentucky. As a part of this program, we went out to different parts of the state and collected specimens of wildlife. I asked how it was that we were able to use the seines for collecting fishes, and was told that the state issued permits to people who were doing fish studies. Upon receiving this bit of information, I wrote the Kentucky Department of Fish and Wildlife Resources requesting a collecting permit. On July 27, 1962, I was issued a permit granting me permission to use any method of collecting except sport fishing, explosives or chemicals. After being granted the permit, I was equipped with seines and other collecting equipment by Dr. Kuehne.

The equipment which I used in making my collections included:

A) 1 four foot common sense minnow seine
B) 1 six foot common sense minnow seine
C) 1 fifteen foot common sense minnow seine
D) 2 gallons of formaldehyde (a preservative used by biologists)
E) a number of gallon jars
F) 1 one hundred by six foot gill net
G) 1 boat
H) United States Geological Survey Topographic Maps of Casey County.

After getting my equipment together, I began my study. I systematically picked out twelve collecting stations on the maps and then went out to them and seined. Harry True helped me seine on weekends and my students, Pete Foster, James Hargis, Walter Daugherty, and Gary Rousey helped me after school.

Not only did we learn about fishes as we worked, we had a lot of fun. As the boys and I left school to go seining, we made quite an impression on the other students. We would leave the laboratory carrying empty jars, seines, and a jar of formaldehyde. The following day many students would be asking us how we did with our fishing and we would show them our catch. The boys were always quick to display their knowledge of fishes.

The boys usually changed into their swimming clothes before leaving school, but I could never convince myself that I would have a job the next day if I did the same. As a result I invariably ended up behind a bush, only half hidden from the road with trunks half on, when a car would drive leisurely by. This always got a laugh from the boys. What could be more amusing to any student than to catch his teacher in this predicament.

One afternoon in early spring, we drove out to the Middleburg Bridge. We got our largest common sense seine out and waded down into the river. The water felt as if it were flowing off ice but we decided that, since we were already in, we might as well catch some fish. We hadn't been seining more than fifteen minutes when a truck stopped on the south side of the bridge. The driver shut off his motor. Then he and his companion proceeded to explain the state laws

regarding the use of long seines. They very carefully described the effectiveness of the game warden's reporting system and then told us that he lost no time in following up a lead.

I thanked them for their advice and told them of the study we were conducting. I pointed out the fact that we were working with the State's permission and that the game warden was fully aware of our operations. I don't think I ever convinced them that the fish were to end up in a study of the Upper Green River stream system instead of in our digestive systems. They finally drove off, shaking their heads in negative fashion.

One very dark night, Harry True and I loaded his boat on a truck and drove up to the Barger Hole to set my gill net. Harry is very much a sportsman and did not hesitate to help me with my study even though it might have seemed a little stupid setting a gill net at night. I had had no success with catching catfish and thought that they might be stirring more at night. So we were going to give it a try.

We put the boat on the river and loaded the gill net, one head lamp, and one flashlight into it. We then climbed into the boat and started down the river, hunting for a one-hundred foot stretch in which to set the net. We found a spot which seemed suitable and pulled over to the bank to tie one end of the net. I secured the top of the net to a root, tied the bottom to a rock, and let the rock sink. The net properly started; Harry then started backing the boat across the river while I carefully untangled and fed the net out.

When we had gotten about halfway across the river, we heard a car pull off the road. I turned to Harry and said, "That's the game warden; he saw our

lights, and is coming to check on us." In a few seconds, we heard someone coming up the river bank. Every few steps he would stumble through piles of drifted sticks sounding like a cow in a corn field. Just as he walked up opposite us, Harry raised his head so that the head lamp was shining on the officer's face. The game warden said, "Come on out boys, I've got you." He was so excited over that catch that I had a difficult time getting him to realize what we were doing. I again offered to call him, as I had done before I started the project, and tell him where I would be seining, but he said that would not be necessary.

A short time after this incident I read an editorial account which was similar to my account except that it depicted the game warden as sneaking up like an Indian.

A few weeks after the Barger Hole incident, I decided to combine a little play with my work. I planned to seine South Fork Creek and needed some extra help. I asked Harry True and Phillip Price to help me. The creek contains a lot of brush and I needed someone to scare the fishes out of the brush as well as someone to take care of the other end of the net. We took our wives along to cook our picnic lunch while we seined.

When we arrived at South Fork, we collected some dry wood and started a fire on the south side of the creek. As we worked, we noticed that there were a couple of men fishing down the creek. The fishermen didn't seem to mind our picnic, but when we hauled our seine out, they got into their landrover and left. While our wives cooked weiners and opened Cokes, we were busy seining. In a few minutes, we

looked back down the stream and saw our wives looking toward the road. Harry said, "I'll bet that's the game warden again." We stopped our work and listened. We could hear someone coming through the brush, but there was something wrong. He was coming from two directions. Shortly, one of the deputy sheriffs walked out of the brush. Farther down the stream, nearer our wives, the game warden walked out on the bank. I spoke to the deputy who was nearest me and then the game warden called to me, "Glenn, come down here; I want to talk to you." I waded down the creek. The closer I got to him, the more I thought about heading across the field on the opposite side of the stream. He didn't look a bit amused. When I finally reached him, he was sitting on the big rock at the ford. I climbed up and sat down beside him. He told me that from here on, I must call him and tell him where I planned to seine.

I was given a more descriptive explanation of the system the two men at Middleburg had told me about. He had received two calls just minutes after we arrived on the scene. The deputy told me about the speedy trip from Liberty to the creek.

With the teamwork that goes on in Casey County, no one need worry about a great deal of illegal hunting or fishing.

The Fishes

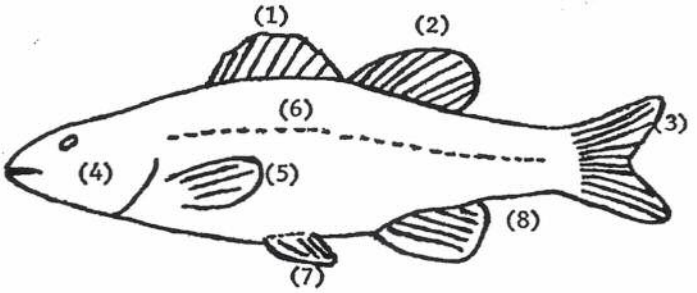
Having finished with a few little anecdotes, I will now move on to a more serious part of the study. In compiling the information which is presented in this section, I have used data collected from my own files and from the files of the Kentucky Department of Fish and Wildlife Resources. Dr. Robert Kuehne assisted me with the identification of specimens collected. I have used a number of references which are listed after the discussion. You may find these references of value.

In order to identify things, we must separate them on the basis of the differences and the similarities which characterize them. A single kind of fish we call a species. The Largemouth Bass is a species of fish. His species name is Micropterus salmoides. The first part of his name is the genus. The genus is the small group to which he belongs. The Smallmouth, Spotted, and the Largemouth Bass all belong to the genus, Micropterus. The second part of the name in many cases is composed of Latin words which describe the fishes in some way. As you will notice in the list of common and scientific names, the Longear Sunfish is called, Lepomis megalotis. Megalotis is Latin for long ear.

The plural of genus is genera. If two or more genera are very much alike, they are placed in a larger grouping called a family. The sunfishes and

basses belong to a family called Centrarchidae. If you look at the way in which I have arranged the fishes, you will be able to see to which family each species of fish belongs.

Before you can really understand the descriptions of the fishes, it will be necessary that you learn the names and locations of a few parts of a typical fish. Here is a drawing of a typical fish with the necessary parts labeled:



(1) Spinous dorsal fin
(2) Soft dorsal fin
(3) Caudal fin
(4) Cheek
(5) Pectoral fin
(6) Lateral line
(7) Ventral (Pelvic) fin
(8) Anal fin

Lamprey Family
"Petromyzontidae"

The members of this family are eel-like and have a sucker-disc mouth. These animals are very much like the ancestral forms of vertebrates. They have no paired fins, jaws, or true teeth. Their skeletons have no real bones but are composed of cartilage instead. The lamprey has specialized gills which are found in pockets arranged along the neck region.

Adults are parasitic, sucking the blood from fish on which they have attached themselves.

In our region, the family is represented by one species, the Ohio Brook Lamprey, Lampetra aepyptera. This lamprey is about 6 to 7 inches long. It has one long dorsal fin which is continuous with the caudal fin. The pale brown color makes it hard to see on the bottom of the river (Figure 1).

Gar Family
"Lepisosteidae"

The gars are primitive fishes with a skeleton which is a great part cartilage. They are long and cylindrical. Their bodies are covered with hard scales which form armors. Their long jaws are filled with sharp teeth. This family is represented by the Longnose Gar, Lepisosteus osseus.

The Longnose Gars swim along near the top of the water and then dive out of sight. Whether they dive because they are afraid of the boat or because they have seen another fish swim by would be debateable. If another fish was the cause, he was soon digested by a gar. They can usually be found in still water which is somewhat brackish.

The armor is so strong that it will bend the prongs of a gig. This fact makes it easy for us to see why no other fishes attack the gar.

In addition to his armor the gar has a formidable weapon, his mouth. His mouth is about one-fifth the length of his whole body and is equipped with ferocious-looking teeth. When lying in your boat, he flashes those sharp teeth in the sunlight and then lunges at you.

The gar is well-adapted for the diving which he

must do in order to acquire food. His head is long and pointed. The pectoral fins are greatly reduced and the ventral fins are located about halfway back on the body. The one dorsal fin and the anal fin are comparatively longer than in other fishes and are situated near the caudal fin. The caudal fin is not divided at all and is shaped like a paddle. With this equipment, all the gar has to do is point his head down, give a swish of his tail, and he is at the bottom of the river.

The Longnose Gar is by far the longest fish I have seen in upper Green River. Figure 2).

Herring Family

"Clupeidae"

The herrings and their relatives have a saw-toothed edge on their bellies. They are thin and appear silvery. The one species of this family found in Casey County is the Gizzard Shad, Dorosoma cepedianum.

The Gizzard Shad has a deep body and is characterized by the large dark spot behind the gill cover. This large dark spot is followed by a number of smaller dark spots. It may grow to a length of 18 inches.

The dorsal fin arches back and the last ray is about twice as long as the first. The pectoral fins are directly behind the gill cover. The ventral fins are on the belly and about halfway between the pectoral fins and the long-based anal fin which has from 30 to 33 rays. The caudal fin is very large and deeply divided. (Figure 3).

Pike Family

"Esocidae"

The pike family includes the muskellunge and

the pikes and pickerels. These fishes are characterized by long cylindrical bodies. Their mouths look very much like the bills of ducks. Inside the mouths are a number of fang-like teeth. This family is represented with us by the Grass Pickerel, Esox americanus.

The Grass Pickerel reaches a length of about 1 foot and a weight of about 1 pound. Its cheeks are covered with scales. The dark body scales give him a barred appearance. He is long and slim and at first sight may be mistaken for a snake, an impression which is soon dispelled as he speeds through the water.

The soft dorsal fin, the only dorsal fin in this case, is located directly above the anal fin. The pectoral fin is located on the bottom. The ventral fin is situated about halfway between the pectoral and the anal fins. The caudal fin is deeply divided.

We often call this fish a "pike". (Figure 4)

Minnow Family
"Cyprinidae"

Of all the families represented in Casey County, the one with the most species is the minnow family. This family is the largest group of freshwater fishes. Not only does it contain more species than any other families it contains more individuals. Its abundance accounts for the fact that the family is valuable. The minnows are valuable as food for man and as food for other fishes. They also utilize the minute plants and animals that are found in the streams, making them available to animals that could not otherwise use them.

Except for carps and goldfishes, minnows have no spines in the fins. Most of the minnows have no more

than 10 rays in the dorsal fin, but the carps and goldfishes have more than this.

Minnows spawn in the spring and in early summer. Some of the minnows give their eggs no care at all while others guard their eggs until they hatch.

In our region, the minnow family is represented by 23 species. I will describe each of these under separate headings.

Stoneroller

Campostoma anomalum

The stoneroller is about 8 inches long when mature. Its mouth is located ventrally and has a ridge of cartilage on the back side. It is a brownish color except for its belly which looks black. The male turns reddish color and grows little hard projections in the spring. There are about 53 scales in the lateral line.

All of the fins, including the halves of the caudal fin, have a rounded shape. The dorsal fin and the anal fin have dark crossbars near their bases. (Figure 5)

Goldfish

Carassius auratus

The little goldfish which is sometimes used for bait thrives in our streams. He may grow to a length of 12 inches. His color varies from a reddish-gold to brown.

The dorsal fin has a long base with more than 12 rays. The caudal fin is elongated and deeply divided. The fins are not all soft-rayed. (Figure 6)

European Carp

Cyprinus carpio

The carp has been introduced from Europe and

is quite successful in the United States. It sometimes reaches a length of 30 inches. It is reddish-brown on the back and silvery below.

The carp, like the goldfish, has more than 12 rays in its dorsal fin. It differs from the goldfish in that the caudal fin is not so deeply divided.

The carp has two barbels (whiskers) on each side of its upper jaw. (Figure 7)

Bigeye Chub

Hybopsis amblops

The Bigeye Chub is 2 or 3 inches long. It has a dusky-green back and a silvery belly. There is a dark silvery band on its sides.

The fins are all sharp pointed. The front of the dorsal fin is above the front of the ventral fin and the back above the front of the anal fin. The caudal fin looks very much like a "V".

There are fewer than 50 scales in the lateral line. The upper lip extends out over the lower forming a snout. (Figure 8)

Spotted Chub

Hybopsis dissimilis

The Spotted Chub is about 4 inches long. It has from 46 to 49 scales in the lateral line. The back is somewhat olive and the belly is light. There is a bluish lateral band with blotches. The one dorsal fin is somewhat square. There is a dark spot at the base of the caudal fin. (Figure 9)

River Chub

Hybopsis micropogon

The River Chub is from 6 to 9 inches long. Its back is dark olive and its belly pale. It has a small

caudal spot which may or may not be round. There are 50 or fewer scales in the lateral line. (Figure 10)

Rosefin Shiner

Notropis ardens

The Rosefin Shiner is 3½ inches long when mature. Its back is steel-blue and its underside is light. A dark lateral band extends down its side. The fins of the male are reddish.

The lateral line is complete and contains 40 or more scales. (Figure 11).

Popeye Shiner

Notropis ariommus

Five inches long, the Popeye Shiner has dark-edged scales above the lateral line and light below. The lining of the belly is black. The eyes are very large. (Figure 12)

Emerald Shiner

Notropis atherinoides

The pale-bodied Emerald Shiner is four inches long. There is a faint lateral band but no pigment at the base of the anal fin. (Figure 13)

Bigeye Shiner

Notropis boops

The Bigeye Shiner is about 3 inches long. It is olive-colored with dusky sides. The mouth extends back past the front of its eye. There is a dark lateral band present. (Figure 14)

Common Shiner

Notropis cornutus

The Common Shiner grows to a length of 7 or 8 inches. It is silvery-colored with a dark band down

the back. There is no lateral band. The first dorsal ray is longer than the last when the fin is flattened. (Figure. 15)

Tennessee Shiner
Notropis leuciodus

The Tennessee Shiner is 3 inches long. Its color is olivaceous and there is a dark lateral band. The caudal spot is continuous with the lateral band. The dorsal fin is dark but there are no spots or bars. (Figure 16)

Silver Shiner
Notropis photogenis

Four inches long, the Silver Shiner is olivaceous with silvery lateral band and black dorsal stripe. (Figure 17)

Rosyface Shiner
Notropis rubellus

The Rosyface Shiner is silvery with wide lateral band. It is four inches long. (Figure 18)

Spotfin Shiner
Notropis spilopterus

The Spotfin Shiner is approximately 4 inches long. It is characterized by the dark blotch which is found on the back of the dorsal fin. (Figure 19)

Mimic Shiner
Notropis volucellus

The Mimic Shiner is 2½ inches long. It is olivaceous with a faint lateral streak. There are 10 to 12 scales in front of the dorsal fin. (Figure 20)

Steelcolor Shiner

Notropis whipplei

The Steelcolor Shiner is a silvery olivaceous fish with a well-developed lateral band. The caudal spot is elongated and connected to the lateral band. The fish is 2½ inches long with 38 to 40 scales in the lateral line. (No drawing)

Pugnose Minnow

Opsopoeodus emiliae

The Pugnose is yellowish and has a dark lateral band. It does not have any scales on its breast. This little 2½ inch minnow has an upturned mouth which gives it its name. There are usually 9 dorsal rays. (Figure 21)

Flathead Minnow

Pimephales promelas

Nearly halfway up the dorsal fin of the Flathead a dark bar can be seen. There is no caudal spot. The lateral line is incomplete and the color olivaceous. The Flathead is usually 2½ inches long. (Figure 22)

Bluntnose Minnow

Pimephales notatus

The Bluntnose is olivaceous with a dusky lateral band. It also has a complete lateral line. There is a black spot at the core of the front of the dorsal fin and also at the core of the caudal fin. The mouth is located on the bottom side. The Bluntnose is 4 inches long. (Figure 23)

Creek Chub

Semotilus atromaculotus

The Creek Chub, which may reach a length of 10 inches is a favorite with the little boys who fish

Figure 1
Ohio Brook Lamprey

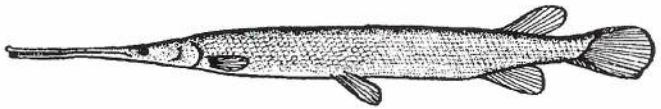


Figure 2
Longnose Gar

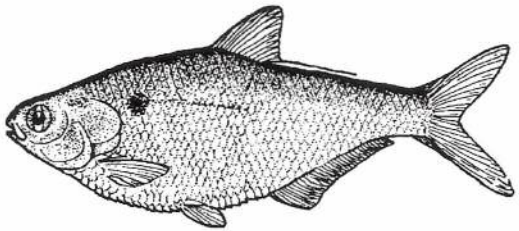


Figure 3
Gizzard Shad

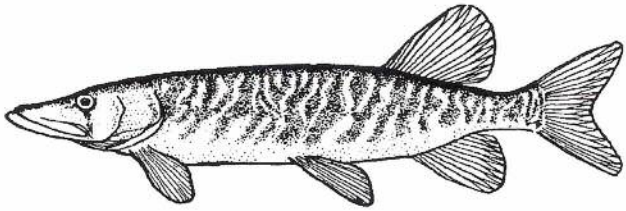


Figure 4
Grass Pickerel

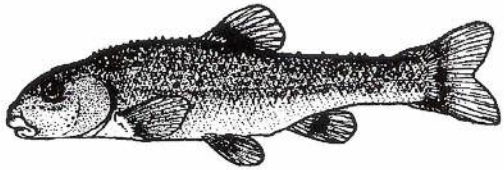


Figure 5
Stoneroller

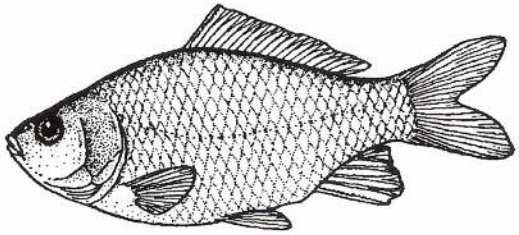


Figure 6
Goldfish

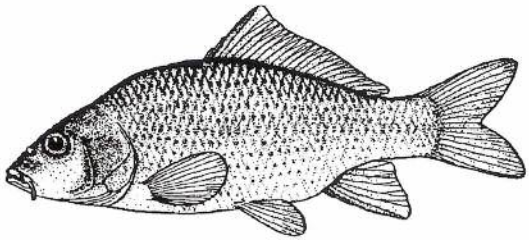


Figure 7
European Carp

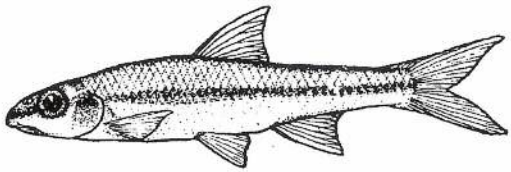


Figure 8
Bigeye Chub

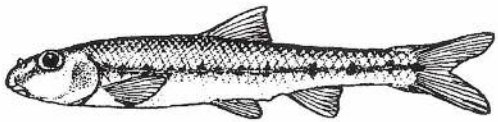


Figure 9
Spotted Chub

Plate 3

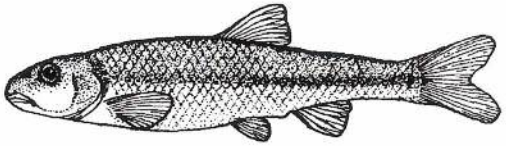


Figure 10
River Chub

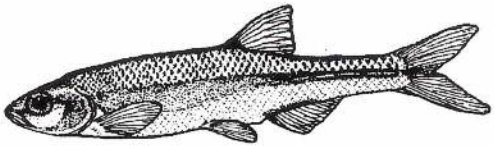


Figure 11
Rosefin Shiner

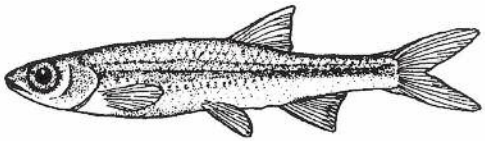


Figure 12
Popeye Shiner

Plate 4

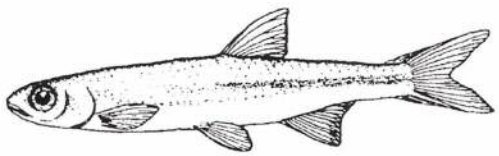


Figure 13
Emerald Shiner

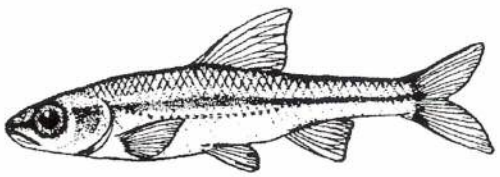


Figure 14
Bigeye Shiner

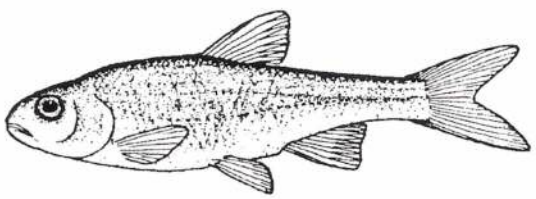


Figure 15
Common Shiner

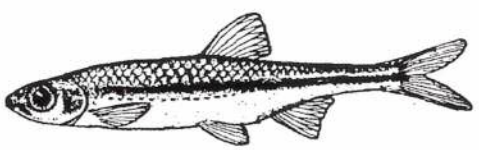


Figure 16
Tennessee Shiner

Plate 5

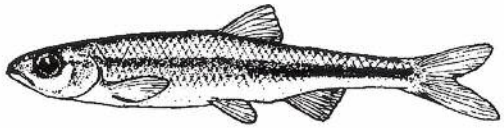


Figure 17
Silver Shiner

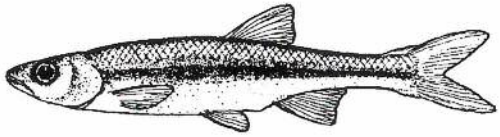


Figure 18
Rosyface Shiner

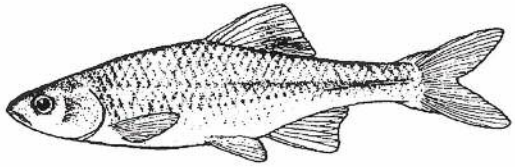


Figure 19
Spotfin Shiner

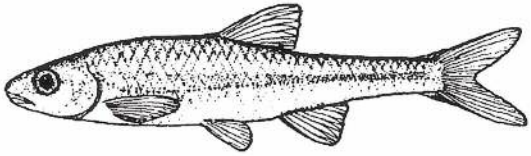


Figure 20
Mimic Shiner

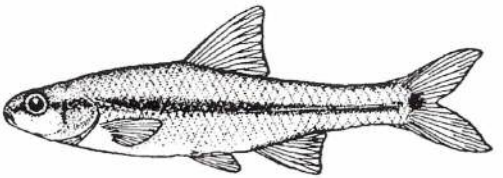


Figure 21
Pugnose Minnow

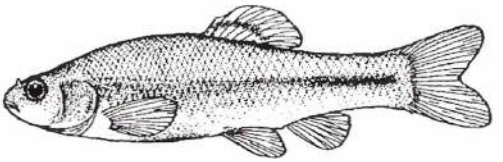


Figure 22
Flathead Minnow

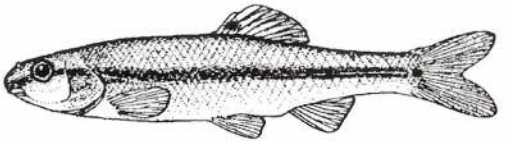


Figure 23
Bluntnose Minnow

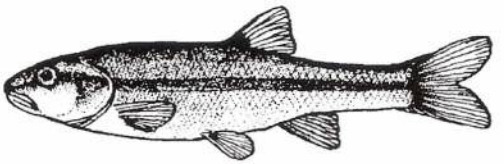


Figure 24
Creek Chub

Plate 7

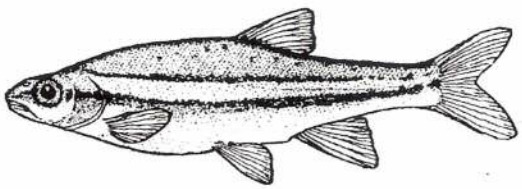


Figure 25
Southern Redbelly Dace

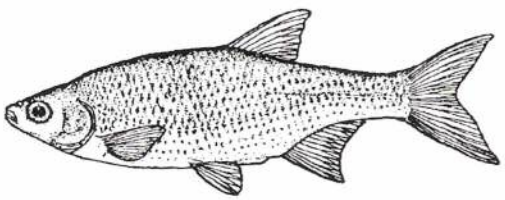


Figure 26
Golden Shiner

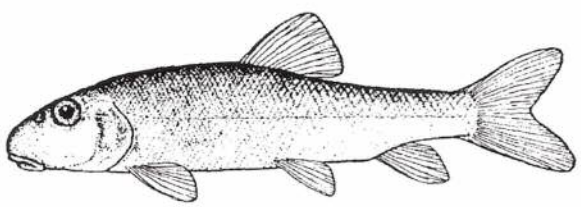


Figure 27
White Sucker

Plate 8

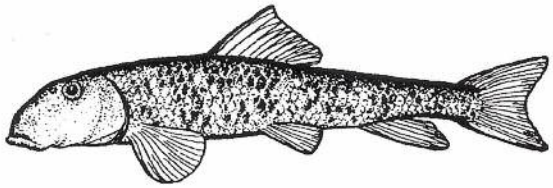


Figure 28
Hog Sucker

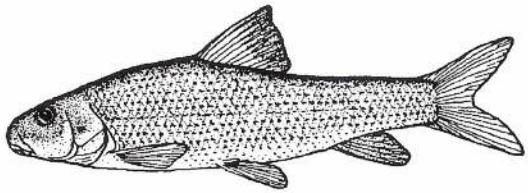


Figure 29
Spotted Sucker

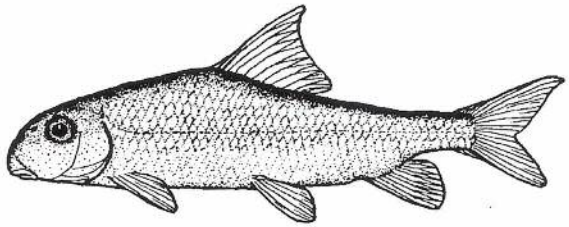


Figure 30
Shorhead Redhorse

Plate 9

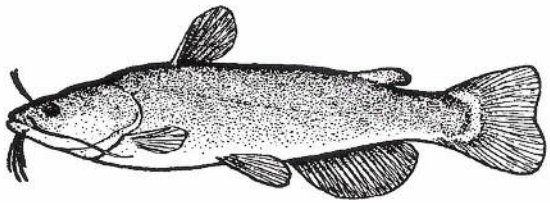


Figure 31
Black Bullhead

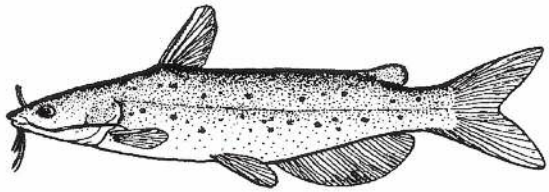


Figure 32
Channel Catfish

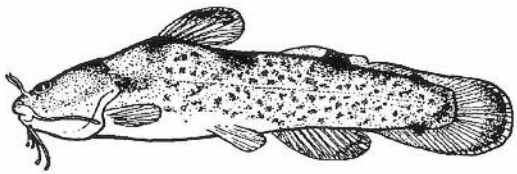


Figure 33
Madtom

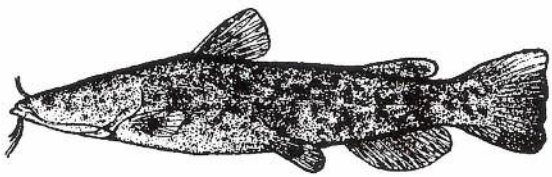


Figure 34
Flathead Catfish

Plate 10

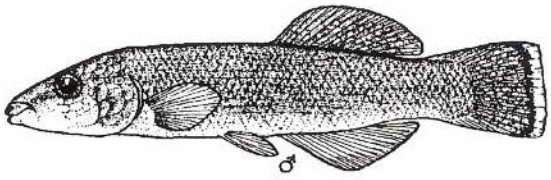


Figure 35
Studfish

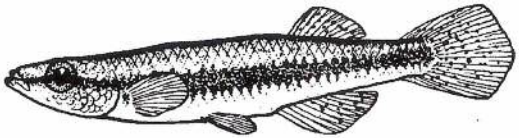


Figure 36
Blackstripe Topminnow

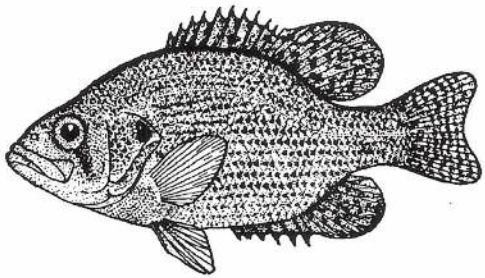


Figure 37
Rock Bass

Plate 11

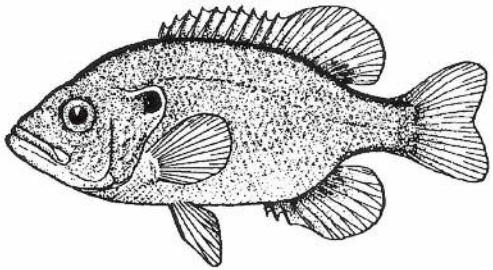


Figure 38
Green Sunfish

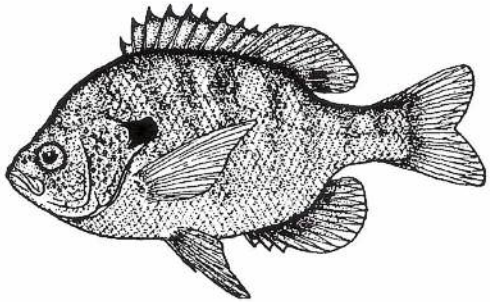


Figure 39
Bluegill

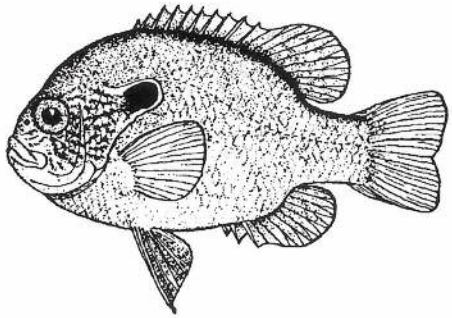


Figure 40
Longear Sunfish
Plate 12

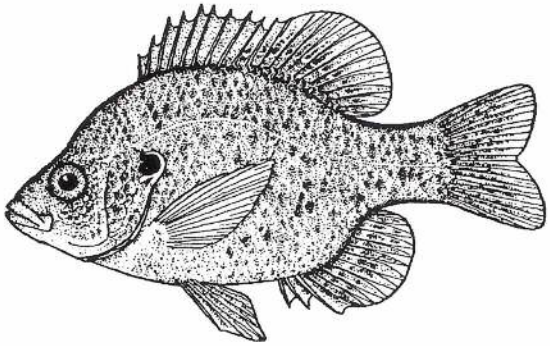


Figure 41
Redear Sunfish

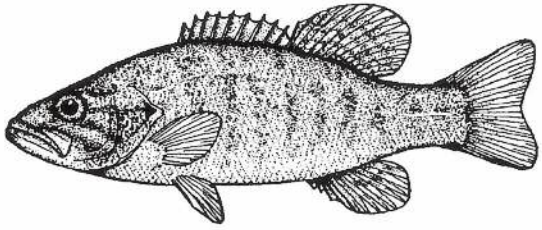


Figure 42
Smallmouth Bass

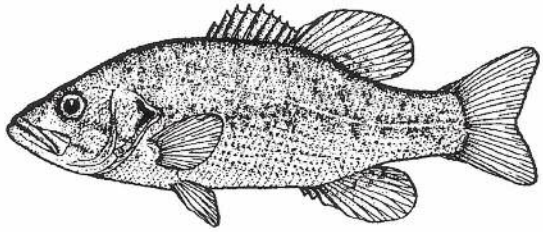


Figure 43
Spotted Bass

Plate 13

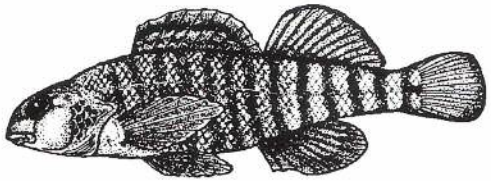


Figure 47
Rainbow Darter

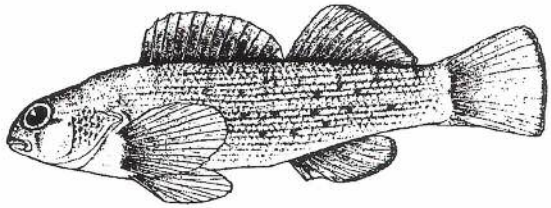


Figure 48
Bluebreasted Darter

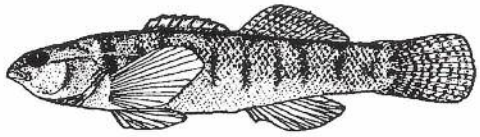


Figure 49
Fantail Darter

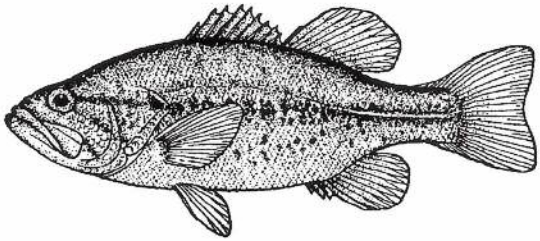


Figure 44
Largemouth Bass

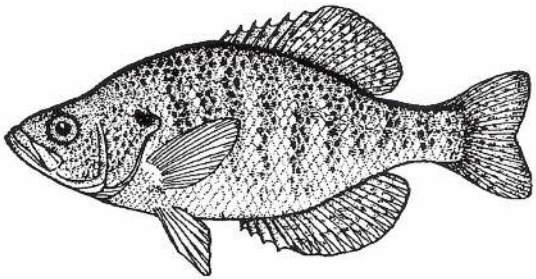


Figure 45
White Crappie

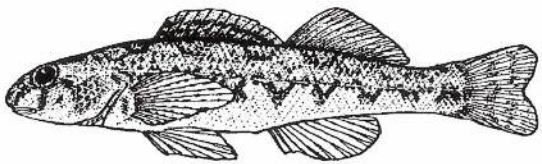


Figure 46
Greenside Darter

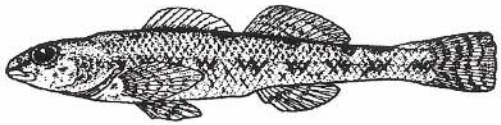


Figure 50
Johnny Darter

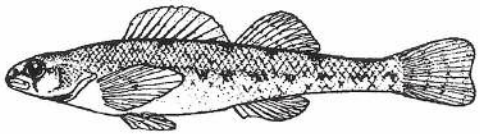


Figure 51
Speck Darter

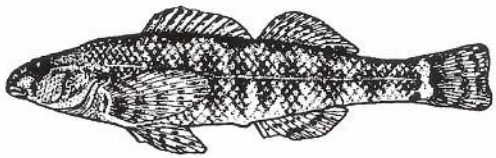


Figure 52
Banded Darter

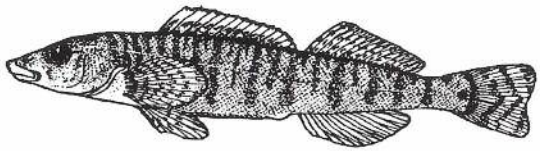


Figure 53
Log Perch

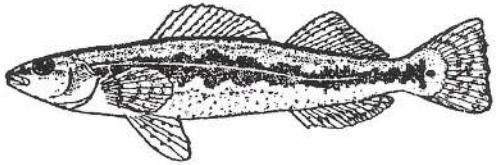


Figure 54
Bluestripe Darter

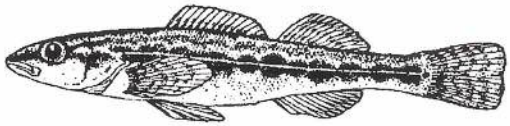


Figure 55
Bigheaded Darter

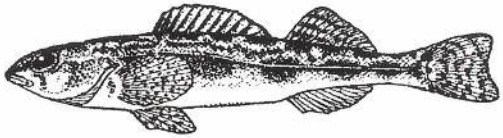


Figure 56
Blackside Darter

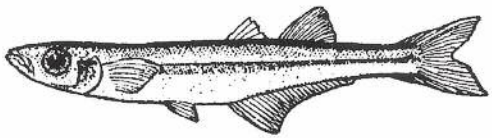


Figure 57
Brook Silversides

Plate 17

with crooked pins and needles baited with earthworms. It is a bluish color on the back and light below. The adult has a black spot on the front of the dorsal fin.

In the spring the sides of the male turn a rosy color. (Figure 24)

Southern Redbelly Dace
Chrosomus erythrogaster

The Redbelly Dace is probably the most beautiful of all the minnows found in our region. It is olive-brown to blackish above and a lighter color below. There are two dark lateral bands with a reddish streak in between. The males have a reddish belly.

Approximately 3 inches long, the Redbelly has about 85 scale rows. There are no spines in the dorsal fin. (Figure 25)

Golden Shiner
Notemigonus crysoleucas

The Golden Shiner has a deep flat body which is a silvery-gold color. The lateral line is deeply decurved. The falcate anal fin contains 10 or more rays. There are only 45 scales in the lateral line while the body is up to 10 inches long. The scales are quite large. (Figure 26)

Sucker Family
"Catostomidae"

The soft-rayed suckers have a toothless sucker-like mouth with thick lips which can be extended or drawn up to the jaws. There are usually more than 10 rays in the dorsal fin.

Even though the flesh of the suckers is very tasty, the suckers do not make good foodfish. Their rib cages extend the full length of their bodies making

it difficult to separate the flesh from the bones.

There are no scales on the heads but the rest of their bodies are covered with smooth scales.

In Green River, this family is represented by 8 species.

White Sucker

Catostomus commersoni

In early spring local fishermen are easily excited by the call from a friend, "The suckers are on!" One of the suckers which is "on" at this time is the White Sucker. This is spawning time and the white suckers come out of the quiet river pools and the lakes to spawn on the riffles.

If you will watch the white suckers on the riffle, you will witness a remarkable courtship. The female swims into the swift water and takes up a position on some gravels. As she maintains this position by use of her fins and small white projections which appear during the spawning season, two or more males will swim into the water beside her. You will notice that she is much larger than the males and that her sides are swollen by the eggs that have developed in her abdomen. The males press against her sides forcing the eggs out of her body. The eggs, since they are heavier than water, drop down onto the gravel. They are then covered with milt which is produced by the male. After a few days, the eggs hatch.

The White Sucker is silvery with a dark back. It has from 55 to 70 scales in the lateral line and may reach a length of 18 inches. The cylindrical body is much longer behind the anal fin than in front, giving the impression that the caudal portion is angled upward. (Figure 27)

Hog Sucker

Hypentelium nigricans

The Hog Sucker is a mottled fish which sometimes reaches a length of as much as 2 feet. As we know him in Casey County, he is rarely over one foot long. This is the sucker which is common to our creeks. He swims around on the bottom of the creek, pushing stones and hunting for some bit of food to eat. His mottled back is so much like the bottom of the creek that you have to look closely in order to tell whether you are looking at a hog sucker or merely reflections of light on the gravel.

This is the small fish that is often thought of as a "whopper" by the little boy who is fishing for minnows in the branch. It is really exciting when he is fishing for two inch minnows and a six inch Hog Sucker goes browsing by.

The hog sucker has a round suction type mouth which is pointed downward. The mouth is much like an accordian in that it can be extended or drawn in a little. The mouth is used for pushing little stones and for eating bottom life, particularly aquatic insects.

The Hog Sucker has only one dorsal fin which is located about the middle of the body. The pectoral fins are just below and behind the gill covers. The ventral fins are halfway between the pectoral fins and the anal fin. The anal fin is very near the divided caudal fin. (Figure 28)

Spotted Sucker

Minytrema melanaps

The Spotted Sucker is characterized by a spot on each scale. It reaches a length of about 18 inches. The lateral line is absent or incomplete in adulas.

The dorsal fin is short with about 10 to 18 rays. (Figure 29)

Redhorses

Five different redhorses are found in our streams. They are the Silver, Shorthead, River, Black, and Golden Redhorse. I will now describe each of these in the above order.

Silver Redhorse

Moxostoma anisurum

The Silver Redhorse may reach a length of 24 inches. The halves of its lower lip meet at an angle. It is silvery to reddish in color. The back is dark and the fins are a reddish color.

Shorthead Redhorse

Moxostoma breviceps

This redhorse is distinguished from the preceding by the straight halves of the lower lip, and 10 rays in the ventral fin and the upper caudal lobe, which is narrower and longer than the lower lobe. (Figure 30)

River Redhorse

Moxostoma carinatum

The River Redhorse differs from the other redhorses in that it has much thicker tooth-like projections under the gill cover.

Black Redhorse

Moxostoma duquesni

The Black Redhorse is rather slender and has fewer scales than the other redhorse. It has 10 ventral rays. There are 44 to 47 scales in the lateral line.

Golden Redhorse

Moxostoma erythrurum

The Golden Redhorse differs from the others in that it has golden-colored fins. The dorsal fin has a black tip and is black near the margin.

Catfish Family

"Ictaluridae"

The Catfish Family is easily recognized by:

1 - flat head
2 - sharp heavy pectoral anal dorsal fin
3 - long barbels around the mouth
4 - scaleless bodies

The barbels are arranged in a definite pattern. There are four under the jaws, two above and one on each tip of the jaw.

Black Bullhead

Ictalurus melas

The Black Bullhead reaches a length of 18 inches. It is dark above and ranges from yellowish-brown to almost black. The belly may be yellow to gray. There are 17 to 24 anal rays. The pectoral spine is not strongly barbed on the back side. The barbels under the jaw are dark. The adipose fin is not attached to the caudal fin. The caudal fin is not deeply forked but rounded or square. (Figure 31)

Yellow Bullhead

Ictalurus natalis

The Yellow Bullhead is like the Black Bullhead except that the barbels under the jaw are whitish, anal rays vary from 23 to 27, and the belly is more or less yellow. The Yellow Bullhead is also 18 inches long. (No drawing)

Channel Catfish

Ictalurus punctatus

The Channel Catfish has a bluish back and is whitish below. The sides are marked with irregular spots. There are 24 to 29 anal rays. The caudal fin is deeply forked. This fish may reach a weight of over 20 pounds. (Figure 32)

Madtoms

Noturus miurus

The 4 inch Madtom is gray-colored and mottled with dark saddle-like blotches. The spines are equipped with poison glands which produce an irritating fluid. The pectoral spine is very long. The adipose fin is separated from the caudal fin by a more or less complete notch. The caudil fin is square or rounded. (Figure 33)

Flathead Catfish

Pylodictis olivaris

The large fish which has been seen swimming near the surface of the Barger Hole is probably a Flathead Catfish. The Flathead reaches a weight of over 100 pounds and thus is the only species which fits the description given by witnesses.

The Flathead is a yellowish-brown color above and a pale-gray below. It is mottled on the sides.

The fins are characterized in the following ways. There are less than 16 rays in the anal fin. The adipon fin is free. The caudal fin is not forked. (Figure 34)

Killifish Family

"Cyprinodontidae"

The members of this family are small fishes which live in fresh water and salt water. Some are

deep-bodied while others are very slender. There is a great deal of difference in the colors of males and females.

They are surface feeders and have up-tilted mouths which adapt them for this mode of feeding. They eat small crustaceans and other small water dwellers. In Green River this family is represented by two species.

Studfish

Fundulus catenatus

The Studfish is bluish or green above and pale below. The male has an orange spot on each scale while the female has brown spots. There are 14 dorsal rays and 14 to 15 anal rays. It is 6 to 7 inches long. (Figure 35.)

Blackstripe Topminnow

Fundulus notatus

This little 3½ inch fish is brownish-green with a broad lateral band extending from its mouth to the base of the caudal fins. The body of the male is marked with a single longitudinal stripe and scattered dots; there are no cross bars. The female is rather plain. The dorsal fin has from 7 to 11 rays. (Figure 36)

Sunfish Family

"Centrarchidae"

The Sunfish family contains the sunfishes, crappies, and black basses. These are the game pan fishes.

The spinous dorsal fin and the soft dorsal fin are continuous with the exception of the large mouth bass in which the two are separated by a deep notch.

The male builds the nest and cares for the eggs until they hatch. He then cares for the young until they are able to swim properly.

Rock Bass

Ambloplites rupestris

The Rock Bass is found among the rocks in swift moving water. He hides under the rocks and darts out when some tasty morsel passes his hide-away.

The Rock Bass varies in color. He looks like his environment. It is difficult for his enemies to see him if he is the color of the slate rock under which he has hidden.

The Rock Bass' mouth extends back to the middle of his eye and opens wide to snap up a minnow or a lure. If it is a lure he has taken, he fights so hard that sportsmen had just as soon catch this little fellow as to catch a Largemouth.

The base of the anal fin is not quite as long as the dorsal fin. The ventral fin is directly below the pectoral fin. (Figure 37)

Green Sunfish

Lepomis cyanelus

The Green Sunfish is the small brownish-green fish we commonly refer to as a Bream. His body is marked with dark vertical bars.

The fins are like those of the Longear except that there are black spots at the base of the soft dorsal and the anal fins. The pectoral fins do not extend back to the anal fin when depressed and are located in front of the ventral fin.

The Green Sunfish has a more pointed mouth

than the Longear or the Bluegill. His diet consists of insects and small crustaceans. (Figure 38)

Bluegill

Lepomis macrochirus

The Bluegill usually weighs less than a pound but occasionally larger ones are found. Even with this maximum size he is among the largest of the sunfishes.

The Bluegill varies in color, but he is characterized by faint vertical bars which extend downward from the dorsal fin. The scales in some cases are a brownish-orange color. A small dark lobe extends back from the cheek.

The fins of the Bluegill may be useful in helping to distinguish him from the other sunfishes. The dorsal fin is continuous; the joining spine and soft ray are of about equal length. The ventral fins are directly below the pectoral fin. If the pectoral fin is pushed down so that it points toward the caudal fin, it will extend back past the front of the anal fin.

After the male Bluegill makes his nest, he goes out and hunts for a mate to drive into it. If he does not succeed in finding a female Bluegill, he will take one of her cousins instead. The crosses occur quite frequently, but the offspring are usually sterile; that is, they can not produce offspring. However, if the cousin mated happens to be a Redear Sunfish, the offspring may be fertile. (Figure 39)

Longear Sunfish

Lepomis megalotis

The Longear Sunfish gets his name from the long black flaps which extend back from the gill covers.

He is usually about 6 inches long when full

grown and is about 3 inches in depth. Even though he is so small, he must be considered good eating; at least, no little boy ever throws this bright-colored fish back. Two or three of them can be seen hanging on just about every willow stringer.

The Longear Sunfish is brilliantly colored. He is blue and orange. The two colors are so intermingled that I can never decide whether he is blue with orange spots or orange with blue spots. Looking at him from the top, I would say the former, and from the the bottom, the latter. Anyhow, he is blue and orange with black flaps on his gill covers.

The Longear's fins are not like those of the Bluegill. Even though the dorsal fin is continuous, the spinous dorsal fin and the soft dorsal fin are quite distinct. The spinous dorsal is much shorter than the soft. The pectoral fin does not extend back to the anal fin when depressed and is a little bit in front of instead of directly above the ventral fin. (Figure 40)

Redear Sunfish

Lepomis microlophus

The lobe which extends back from the gill cover has a red or orange margin. The fish is olivaceous with a yellow or orange breast. The pectoral fin is long reaching behind the front of the anal fin. The caudal fin is roundly forked. The base of the dorsal fin is much longer than the base of the anal fin. The mouth is small. The body is deep and may reach a length of 10 inches. (Figure 41)

Smallmouth Bass

Micropterus dolomieui

The Smallmouth Bass varies in color. However, he is generally dark on the back and lighter on the

ventral side. On his sides can be seen faint vertical bars which distinguish him from the largemouth bass. The mouth of the smallmouth extends back to the eyes but does not extend behind them.

All of the fins of the Smallmouth are like the fins of the Largemouth except the dorsal fin. In the Smallmouth the dorsal fin is continuous with no division between the spinous dorsal and the soft dorsal fins. The spinous dorsal fin is not arched as much in the Smallmouth as in the Largemouth.

The Smallmouth, living in cool deep water is a favorite game fish. Since his diet consists of insects, small fishes, and crayfish, any lure resembling these may be used. When he strikes and is snagged, he puts up a fight which is comparable to that of the trouts and salmons.

If you would like to watch the Smallmouth spawning, when spring comes, climb out on any tree which happens to be leaning over a pool of water three to six feet deep. You will see the male Smallmouth with head pointed up and caudal fin down. He will be fanning out a nest. When he has fanned out a depression, which may be a couple of feet wide, he will try to drive females into the nest. When he succeeds in driving a mate into the nest, she will lay sticky eggs on the polished stones. The male then deposits milt on the eggs so that they will hatch. The male stays and guards the eggs until they hatch and then he guards the young until they can swim away from danger. (Figure 42)

Spotted Bass

Micropterus punctulatus

The habits of the spotted bass are similar to those of the Largemouth and the Smallmouth.

The mouth of the Spotted Bass extends back to the middle of his eye, not as far back as that of the Largemouth but farther than the Smallmouth.

He differs from his cousins in color in that he has a large dark stripe which extends down his sides. Dark spots are seen all over his sides, hence the name spotted bass.

The Spotted Bass' fins are like the fins of his cousins except for the dorsal fin. The dorsal fin is continuous and the spinous part is arched like that of the Largemouth. (Figure 43)

Largemouth Bass

Micropterus salmoides

The Largemouth Bass, as the name implies is easily distinguished from the other basses by the size of the mouth. His mouth extends back behind his eyes.

If you watch the Largemouth as he swims around in the water, he will appear to be a very dark fish. If you turn him over and look at him, he will be lighter in color on the ventral (bottom) side. This is a part of his protection. As we look down at him he looks very much like the bottom of the stream. As we look up at him from the bottom of a jar or an aquarium he resembles the sky in color. You can imagine the advantage of having this protection.

There is a light streak which runs the full length of the Largemouth's body. When young, he has a dark stripe on his side. The stripe disappears as he gets older. His underside is dotted with dark scales which are scattered among the silver.

The spinous dorsal fin and the soft dorsal fin are almost completely separated in the Largemouth. The spinous dorsal fin is spread out like a fan while

the soft dorsal fin slants backward. The ventral fins are just behind and below the pectoral fin. The anal fin is directly below the soft dorsal fin and does not contain as many rays (sections) as the soft dorsal. The caudal fin is not very deeply divided.

The Largemouth Bass is found in still or slow-moving water. It likes mud-bottomed pools and can be seen swimming around among the weeds that grow in the mud.

The Largemouth Bass spawns in the spring. The sticky eggs cling to sticks or the roots of aquatic plants. The male guards the school of young fish which may number up to four thousand. (Figure 44)

White Crappie

Pomoxis annularis

The White Crappie is the largest of the sunfishes. It may grow to a length of 12 inches and may weigh over 2 pounds.

The scales are silvery white with a few black scales intermingled.

The White Crappie has a streamlined look with all of its fins pointing backward. The base of the fin is as long as the base of the dorsal fin. The rays of the soft dorsal fin are much longer than the spines in the spinous dorsal fin.

The mouth forms a snout and is turned up a little.

The Crappie eats insects, crustaceans, small water animals, and some small fish.

I have found the Crappie in still and slow-moving water but not in swift water. (Figure 45)

Perch Family

"Percidae"

The members of this family are characterized by

a completely divided dorsal fin, one part spiny, the other soft. All the members spawn in the spring. All are predaceous and the larger species are piscivorous (fish-eating). The smaller species eat minute insects and crustaceans. In our streams, the perch family is represented by 12 species.

Greenside Darter

Etheostoma blennioides

The 4 inch Greenside has an olive-colored body marked with a series of U-shaped blotches. Its snout is broadly rounded. It usually has 2 anal spines. (Figure 46)

Rainbow Darter

Etheostoma caeruleum

The Rainbow Darter is olivaceous and has 10 to 12 dark bars on back side. At spawning time, the males are very brilliant. The lateral line is straight and incomplete. The body is a little less than seven times as long as deep, reaching a length of 2½ inches. (Figure 47)

Bluebreasted Darter

Etheostoma camurum

The Bluebreasted Darter is 2½ inches long. It has a short head with a decurved snout. It is brownish-green. The vertical fins are trimmed with black. The males have rich blue breasts and red spots on their sides. (Figure 48)

Fantail Darter

Etheostoma flabellare

The Fantail is grayish-green with a large black scale at the shoulder position. Its sides have from 9 to 11 cross bars. Each scale has one spot. The lateral

line reaches to the front of the soft dorsal fin. The spinous dorsal fin is only half as high as the soft dorsal. The Fantail is about 3 inches long. (Figure 49)

Cumberland Fantail Darter

Etheostoma kinnicotti

The Cumberland Fantail is similar to the Fantail except that it lacks dots, lines and bars. (No drawing)

Johnny Darter

Etheostoma nigrum

The 3 inch Johnny Darter is grayish-brown. Its sides are marked with a longitudinal row of U-shaped blotches. It usually has one anal spine. Its back is usually entirely scaled or naked in front of the dorsal fin only. (Figure 50)

Speck Darter

Etheostoma stigmaeum

The Speck Darter is 2½ inches long. There are usually 8 W-shaped blotches on each side of its olivaceous body. There are 2 anal spines. (Figure 51)

Banded Darter

Etheostoma zonale

There are 8 narrow bands encircling the belly of the Banded Darter. Its back is olivaceous and its belly is yellowish. Its sides have brownish spots in the lateral line. There are usually less than 12 spines in the dorsal fin. This is another 3 inch darter. (Figure 52)

Log Perch

Percina caprodes

The Log Perch reaches a length of 6 inches. Its snout extends beyond the upper lip. It is yellowish

with sides marked by numerous cross bars or spots. (Figure 53)

Bluestripe Darter

Percina cymatotaenia

The Bluestripe is characterized by a dark longitudinal band on the back of its body and a small black spot at the base of the caudal fin. It is yellowish-green and covered with dark spots. The snout is short and blunt. It is 4 to 5 inches in length. (Figure 54)

Bigheaded Darter

Percina macrocephala

The 6 inch Bigheaded Darter is pale brown with 9 connected spots along its sides. It has a small black spot at the base of the caudal fin. The cheeks are entirely naked. Its snout does not extend past the upper lip. (Figure 55)

Blackside Darter

Percina maculata

The Blackside Darter is yellowish with 5 or 6 long blotches on each side. Its cheeks are scaled and its belly naked. There is a small black spot at the base of the caudal fin. This fish seldom reaches a length of over 3 inches. (Figure 56)

Silverside Family

"Atherinidae"

The Silversides are slender fishes with a very noticeable silvery band extending the length of their bodies. They are pale and somewhat transparent green. They are usually seen swimming in schools.

Brook Silversides

Labidesthes sicculus

The Brook Silversides is a transparent green fish with a silver stripe on its sides. It is about 3 inches long. It swims in a school often skipping short distances above the water. Its scales are small, numbering 76 to 80 rows. The base of the anal fin is longer than the base of the two widely separated dorsal fins combined. (Figure 57)

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INDEX

INDEX — Continued