Know Your Oklahoma Fishes

By H. C. Ward

Illustrated by Wallace Hughes

Edited by Juanita Mahaffey

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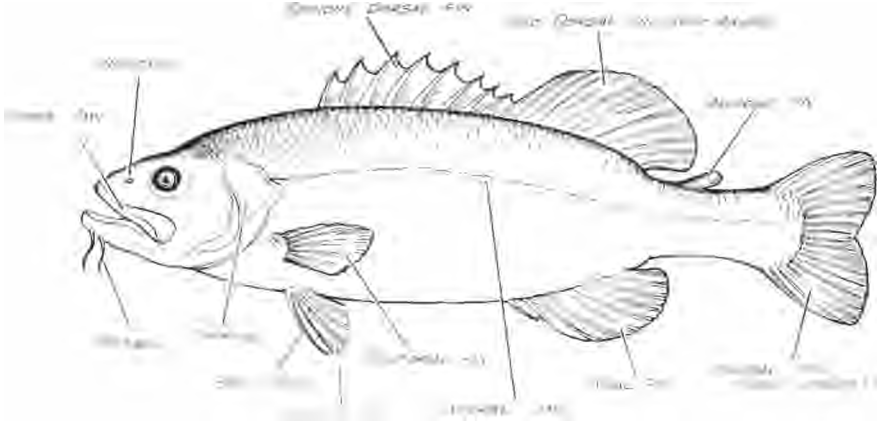


Hypothetical Fish Showing Common Anatomical Structures

ntroduction

The materials in this publication were assembled especially for the sportsmen of Oklahoma and State Game and Fish Department field personnel. At the same time it is sincerely hoped that the information contained herein will help elementary and high school groups become more familiar with some of the important fishes of Oklahoma.

There are 23 known fish families and more than 150 species found in the State. Sixteen of the families and about one-third of the species are included herein with a brief discussion accompanying each species. For the sake of brevity the following families were omitted: Salmon (Salmonidae), Pike (Esocidae), Topminnow (Cyprinodontidae), Pirate-perch (Aphredoderidae), Perch (Percidae), Sculpin (Cottidae), and Sheepshead (Sparidae).

The classification system of our fishes is very complex and need not be herein listed. However some explanation should be included on the scientific naming. As you will note, all Family names end in ---idae. A family is composed of a group of individuals having related characteristics. Further divisions of the family include genus and species. For example, the scientific name of the largemouth bass is Micro pterus salmoides (Micropterus being the genus and M. salmoides the species) .

In the consideration of the fish families listed herein, you will note that following the FAMILY the accepted common name is succeeded by the scientific designation (italicized) . Other names commonly used in certain localities are given for most of the fishes. These names are a source of much confusion among laymen and it is urged that the accepted terms be followed whenever possible. Many individuals call various sunfishes (bluegill, warmouth, redear sunfish, green sunfish, etc.), by the general term "perch". The use of this term is misleading since perch is the rightful designation of an entire family—the Perch Family (Percidae). The yellow perch, walleyed pike, logperch and various darters belong to the true perch family.

Lamprey Family

(Petromyzontidae)

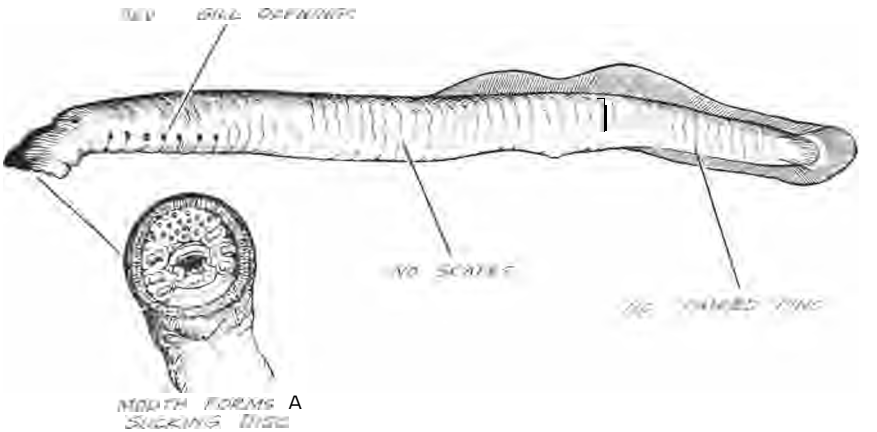
Chestnut lamprey — Ichthyomyzon castaneus
Southern brook lamprey — *Ichthyomyzon* gagei
(Lampreys, Lamperns, Lampers,
Lamper Eels, or Blood-Sucker)

The lampreys are placed in a class (Monorhina) separated from the true fishes. They are characterized by an imperfectly developed skull, lack of jaws, the absence of paired fins, resemblance to eels in that limbs are absent, and seven external gill openings on each side.

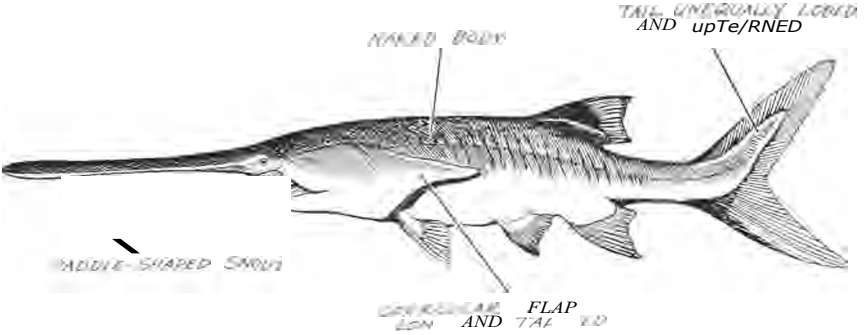
Both forms are present in the extreme eastern areas of the State, especially the Ozark and Ouachita regions. They are probably abundant in these areas.

The parasitic form (chestnut lamprey) attaches itself to other fishes by means of the sucking disc and rasps through the skin and feeds upon the blood and flesh. The smooth-skinned fishes are most frequently attacked, but lampreys are also found on the scaly fishes, usually on the least movable body portion. The young hatch as larvae which spend their early life in muddy banks or shore ooze. These larvae transform into adult-like lampreys during late summer. The chestnut lamprey becomes parasitic on other fishes while the brook lamprey (non-parasitic) does not feed but merely lives until the next spawning season, when it reproduces and dies. The parasitic form after reaching sexual maturity, spawns and dies. As larvae the lampreys strain minute organic material from the oozy mud for their food.

These creatures usually ascend streams to spawn in the spring but they may spend much of their life in creeks, rivers and lakes. Spawning is said to occur in shallow water, and, as a rule, where there is some current over pebbly or stony bottom near the headwaters of a stream.



Chestnut Lamprey



Paddlefish

Paddlefish

(Polyodontidae)

Paddlefish — ***Polyodon spathula***

(Spoonbill Cat, Shovel-Fish, Shovel-Cat,
Duckbill Cat, and Spade-Fish)

This species is sometimes erroneously referred to as a member of the catfish family. At one time the paddlefish was placed in a classification with the sharks, but was later correctly set aside into a separate group. Actually, it resembles the marine shark as much as any of our present day fresh-water fishes. The paddlefish is now considered to be one of the most primitive of our fishes.

The paddlefish is typically found in bayous, lowland streams, and river channels. It is definitely known from the Arkansas River drainage system (Illinois, Neosho, Salt Fork rivers) and Red and Little rivers. Catches have been reported below the dams of Lake Texoma, Grand Lake and Great Salt Plains Reservoir, but its relative abundance is unknown.

The paddlefish is not often taken by the angler, because of its feeding habits. Soft-bodied aquatic insect larvae (day-flies, dragon-flies, and gnats) and a smaller percentage of adult aquatic insects, leeches, and water-worms are taken as food since the paddlefish does not possess teeth or any other crushing apparatus in its large but feeble jaws. The gill filaments are used to strain out the small semi-microscopic organisms as the fish swims with open mouth. Also, nearly all forms of Entomostraca and aquatic vegetation, largely algae, are taken as food. Specimens have been reported to six feet in length but the paddlefish is not ordinarily taken heavier than 50 pounds.

Little is known of the breeding habits of the paddlefish but it is a common belief among fishermen that spawning occurs in deep water off shoal areas.

Sturgeon Family

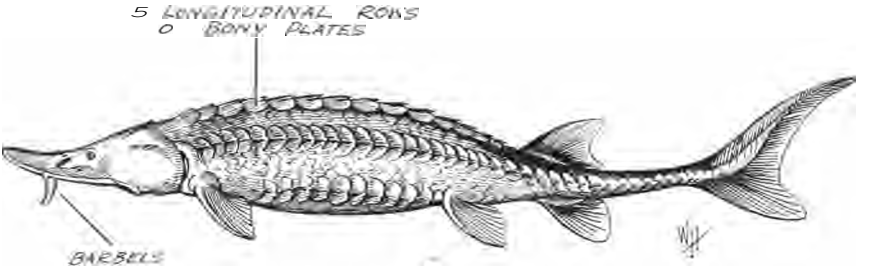
(Acipenseridae)

Shovelnose sturgeon — *Scaphirhynchus platorynchus*

The shovelnose sturgeon is prehistoric in general appearance, having an elongated body with five longitudinal rows of bony shields. This species is known to frequent some of our larger rivers and is quite often taken below artificial impoundments such as Lake Texoma. From varied reports, no doubt reliable, the shovelnose was once common in the Arkansas River. The shovelnose sturgeon commonly does not exceed five pounds in weight, differing from some of its relatives (Russian sturgeon) that may reach a size up to 3,000 pounds.

Little or no investigative work has been accomplished on the type of environment best best suited for this fish. As one might expect from the position of the toothless mouth the sturgeon feeds mostly on the bottom by sucking up bottom food material and straining out the food organisms. The barbels ("whiskers") on the underside of the snout assist in the location and selection of food. Although no food-habit studies have been made of the sturgeon in Oklahoma, extensive studies have been accomplished on this species in other States. Other workers have found that stomachs ordinarily contain worms, mollusks, small fishes and small aquatic plants.

Spawning occurs sometimes between April and June. The sturgeon probably ascends smaller streams for this purpose.



Shovelnose Sturgeon

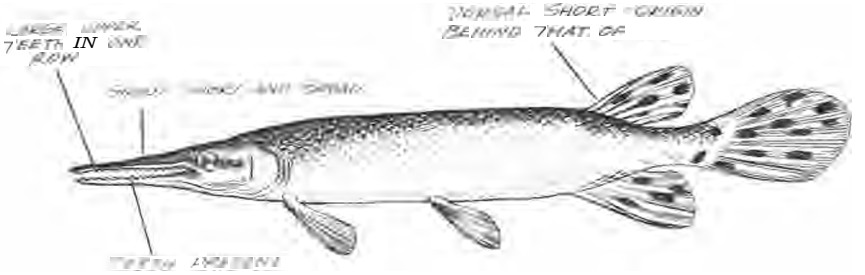
Gar Family

(Lepisosteidae)

Longnose gar — *Lepisosteus osseus*
Alligator gar — *Lepisosteus spatula*
Shortnose gar — *Lepisosteus platostomus*
Spotted gar — *Lepisosteus prod uctus*

(Billfish)

Geologists have uncovered fossils to reveal that fishes almost identical with our present day gars lived millions of years ago. Thus, the gar is quite often referred to as a "living fossil." The gar is equipped with heavy diamond-



Short-nosed Gar

shaped enamel scales. The alligator gar is the largest member of the family. A specimen was recently taken from Deep Fork River that weighed 185 pounds and was seven feet and two inches in length. The longnose and shortnose gars do not ordinarily exceed four feet in length.

The gars apparently prefer warm lakes and slow moving streams. They are sluggish in their habits except when feeding or spawning at which time they are capable of swift, deft movements. When conditions are favorable, gars may become exceedingly abundant, and under such extreme conditions it has been felt that some form of control is necessary. Because of their habits, gars are often regarded as obnoxious. Some workers have been too quick to condemn the gar because of its food habits. The bare fact that the gar has existed for so many millions of years in the midst of our highly valued scaly fishes is not to be ignored. It is possible that the existence of gars may be one factor in helping to maintain a balance of nature in such situations as larger lakes, thereby not permitting any one species from becoming dominant to the extent of overpopulation. On one occasion the writer observed numerous gars in a stream which was producing good bass fishing. Actually, to date we have no definite evidence that gars should be eradicated from our waters. Assuming that we had such proof we would be puzzled with the lack of any aedquate method for doing so. Gars are abundant in many lakes and streams of Oklahoma. The alligator gar is known to be in Greenleaf Creek, Mountain Fork and Poteau rivers. Stomachs of gars examined contained practically nothing but small soft-rayed fishes less than four inches long.

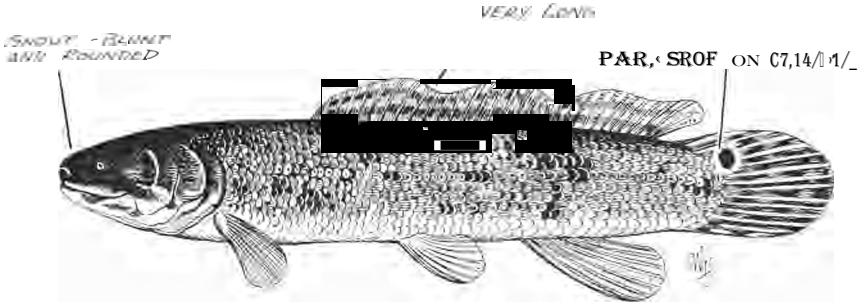
The height of the spawning season probably occurs during the month of April and at such times gars are frequently observed thrashing around in shallow water scattering their eggs. The eggs stick to whatever they fall upon and remain so until hatching.

Bowfin Family

(Amiidae)

Bowfin — Amia calva
(Grindle, Dogfish, Lawyer, Cypress Trout)

The bowfin is the sole living representative of its family, and like the gar, it is termed a "living fossil" because all of its numerous relatives have long since become extinct. The blunt head of the bowfin is covered by very hard



Bowfin

corrugated external bones scarcely covered by skin. The length of this species may range from one-half to two feet with the females usually larger than the males in any one age group. The bowfin is a quiet water inhabitant and seems to prefer weedy areas especially during spawning. It also occurs in large streams. The bowfin probably ranges in the whole eastern part of Oklahoma and it is especially abundant in Wister Reservoir at this writing. It is a greedy and savage fish, feeding upon most any animal that comes within reach, chiefly other fishes, crayfishes and mollusks. The bowfin is an exceptional fighter when taken by hook and line.

The breeding period is typically during the month of April. The bowfin is one of the nest building fishes and, as is usually the case, the male fish builds this structure. A female of 28 inches in length is capable of spawning approximately 55,000 eggs. After spawning is completed, the male guards both the eggs and the fry. After leaving the nest, the young move in a compact school until they reach a length of approximately four inches.

Mooneye Family

(Hiodontidae)

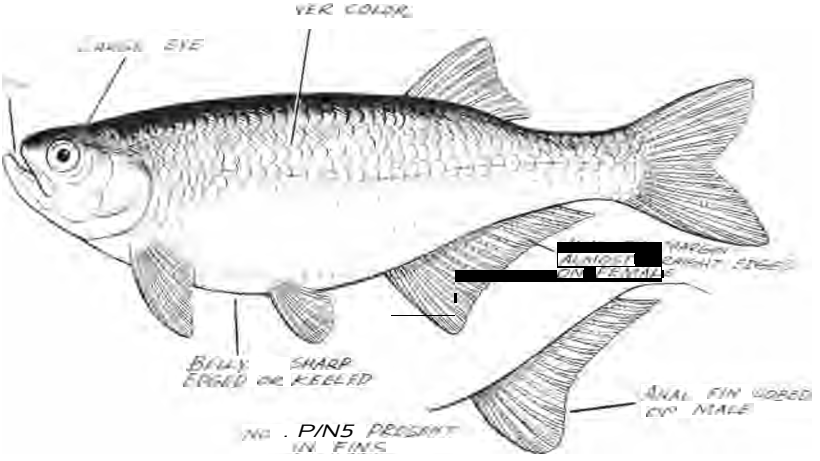
G — H

(Toothed Herring)

The goldeye is shad-like in appearance, however it does not belong in the same family. The belly is keeled and is relatively smooth-edged. It seldom exceeds 12 inches in length and usually the average weight is less than one pound. According to the information available it is found only in larger streams and the artificial lakes of Oklahoma. Its habits are well adapted to the type of habitat furnished by the impoundment of the Red and Washita Rivers — Lake Texoma. It has become exceedingly abundant in that lake. The goldeye hits a small plug or surface fly with a great deal of gaminess, but is seldom utilized for food because of the numerous small bones. However, the goldeye in Canada is considered a near delicacy after it has been put through a process of smoking.

Some detailed studies have been made on this species in Lake Texoma. Its main food seems to be small insects, as stomach-content studies reveal a myriad of species. Occasionally small fish, aquatic larvae of insects, and crustacea are taken as food. Goldeye have been observed to concentrate in lee areas where "wind-blows" carry land insects into their feeding areas.

Spawning habits are not well known in Oklahoma. Workers in Canada report that goldeye ascend rivers and deposit their eggs on the gravel or rock shoals during the period between the last of May and the middle of July. They report that goldeye do not spawn every year after sexual maturity has been reached, however a portion of the female population will be found spawning at the proper period while others contain immature eggs.



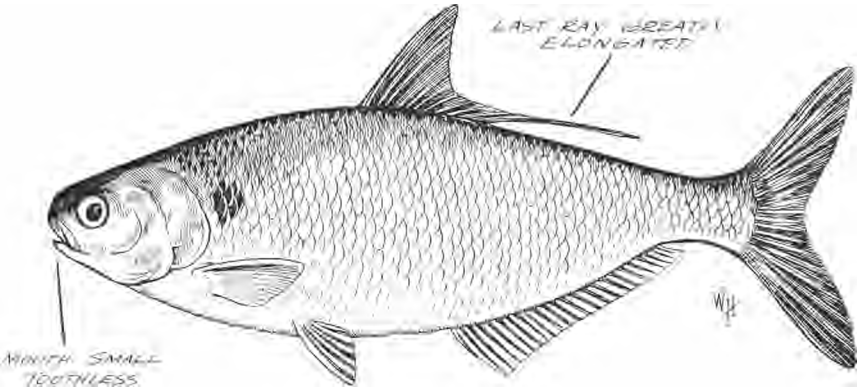
Goldeye

Herring *Family*

(Clupeidae)

Gizzard shad — Dorosoma cepedianum

Members of the herring family are characterized by a sharp-edged keel armed with bony serratures. Shad, like the goldeye, seldom attain a size more than 12 inches in length. A few specimens collected from Lake Overholser and Great Salt Plains Reservoir have been as much as 18 inches in length and have weighed as much as three pounds. Shad are common throughout Oklahoma and are usually abundant in larger artificial reservoirs. Their relative abun-



Gizzard Shad

dance may fluctuate considerably from year to year in any lake according to a cyclic phenomenon involving factors such as food supply, size of population, and severeness of winters.

This immensely abundant fish, although little esteemed as a food fish, is probably the most valuable in our lakes because of the almost inexhaustible food supply which it offers to the sport fishes. With the exception of the first month or so of its life, the gizzard shad derives most of its food from the muddy bottoms of our lakes and thereby serves to convert the organic material into the flesh of our most highly valued fishes.

During periods other than winter, the shad is an active fish with a tendency to school. It can be seen darting rapidly in all directions when disturbed in some quiet cove and just as often seen skipping and leaping in the middle of a large windswept lake. When almost surrounded by a seine, it is very likely to escape around the end or skip over the cork line. During winter it presumably withdraws to deep water where it hibernates in a be-numbed condition. It is not uncommon for winter fishermen when pulling their hooks through the water to snag one of these fish. The shad is rarely taken on a baited hook.

The gills of this species possess a very effective straining apparatus by means of which the finest particles of silt are separated from objects large enough to serve as food. The name, gizzard shad, is designated because of the thick-walled stomach. Minute plants and much vegetable debris are commonly packed from one end of the intestine to the other.

The spawning season occurs in early spring, usually in late April or early May. The eggs are scattered at random to settle and adhere to any object such as sticks, vegetation or rocks. The gizzard shad is very prolific, but actual egg counts are unavailable.

Sucker *Family*

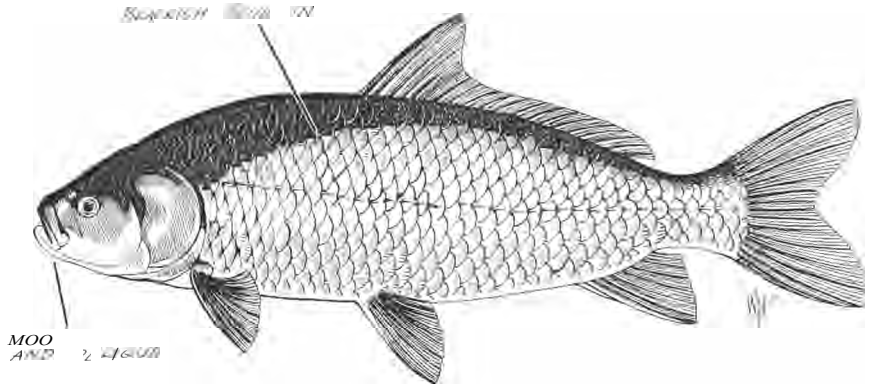
(Catostomidae)

Bigmouth buffalo — Ictiobus cyprinellus
(Redmouth Buffalo)

The bigmouth buffalo is one of the largest members of the sucker family, as it sometimes reaches a length of two and one-half feet and a weight of 20 pounds or more. It is quite abundant in our larger streams and in some of our cut-off lakes. It has been collected from the Arkansas, Neosho, Red, Poteau and Illinois river systems. It is present in Lake Texoma, but its relative abundance is not known.

As the name implies, it is equipped to collect its food from muddy lakes and river bottoms. Food includes algae, seeds of aquatic plants, mollusks, commercial slops and wastes, insect larvae and in general, other bottom organisms.

Spawning occurs in early spring and the eggs are spawned in shallow water in a haphazard manner. There is no parental care during or after the incubation period.

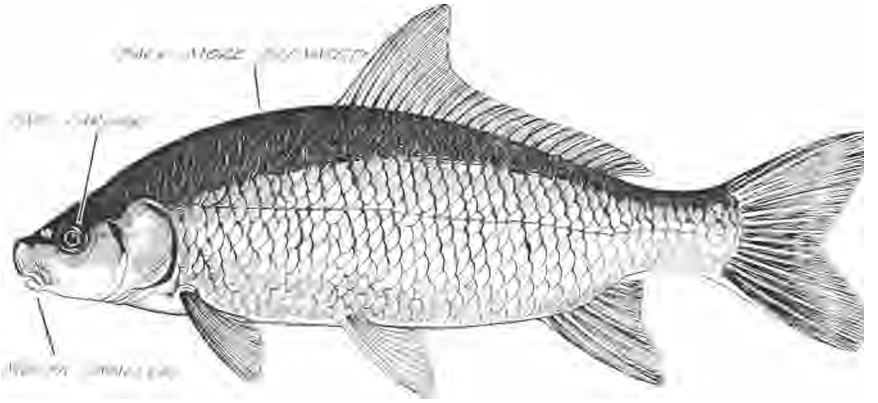


Bigmouth Buffalo

Smallmouth buffalo — *Ictiobus* bubalus
(Razor-Backed Buffalo, Quillback Buffalo)

The maximum size attained by the smallmouth buffalo is usually less than that of the bigmouth buffalo. The maximum size is approximately 15 pounds and 25 inches in length. The smallmouth buffalo is found in most areas of Oklahoma, however it does not seem to be too abundant. It tends to prefer deeper water and does have a stronger preference for flowing streams than does the bigmouth buffalo.

Its breeding habits as well as food habits are similar to those of the bigmouth buffalo.



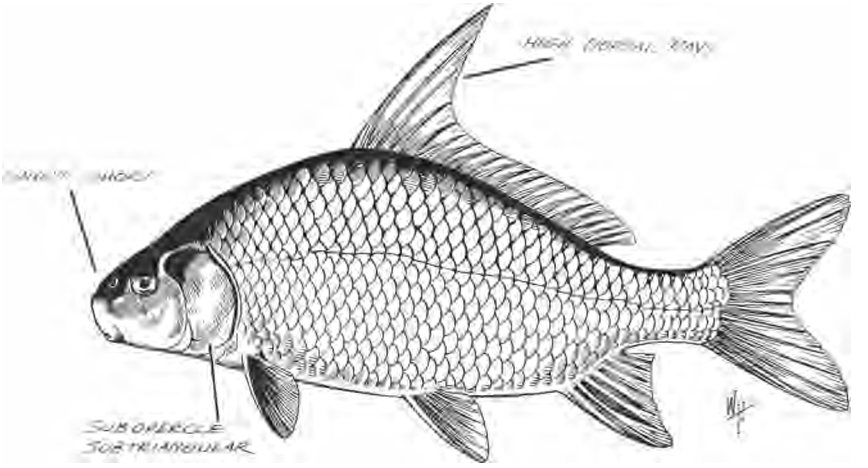
Smallmouth Buffalo

River carpsucker — Car***piodes*** car***pio***
(Quillback, Silver Carp)

The color of the carpsucker is generally light and silvery and it is sometimes mistaken for the smallmouth buffalo. Carpsuckers do not often exceed 16 inches in length, nor more than four pounds in weight, however, recent collections have yielded specimens as much as 10 pounds in weight. The carpsucker is quite common in both the Red and Arkansas river systems as well as in many of our artificially impounded lakes.

Its food habits are similar to the aforementioned, although greater quantities of mud are taken into the digestive system.

Spawning activities have been noted from the middle of May to the middle of June.

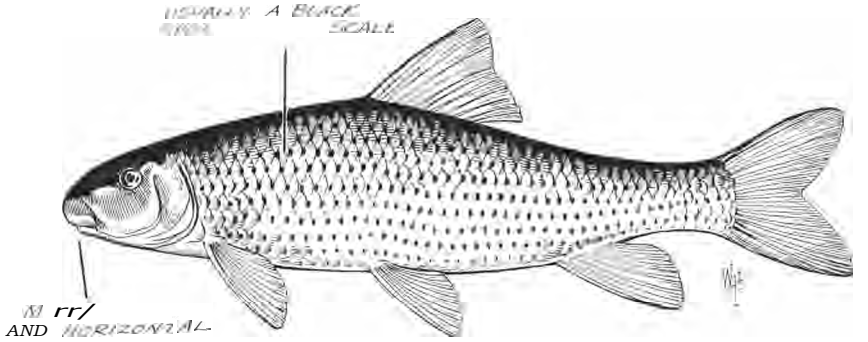


Carpsucker

Spotted sucker — Minytrema melanops
(Striped Sucker)

The general body form of the spotted sucker is much more rounded than the previous suckers. It often grows to a length of 18 inches. The spotted sucker is typically a creek or small river fish, but it is not rare in some of the eastern artificial or cut-off lakes. It is reported as being abundant in Greenleaf Lake and Kiamichi Mountains Lakes.

Its foods consist of bottom fauna, largely mollusks and insect larvae.



Spotted Sucker

Black **redhorse** — Moxostoma duquesnii
Golden **redhorse** — Moxostoma erythrurum
Northern **redhorse** — Moxostoma aureolum
River **redhorse** — Moxostoma carinatum

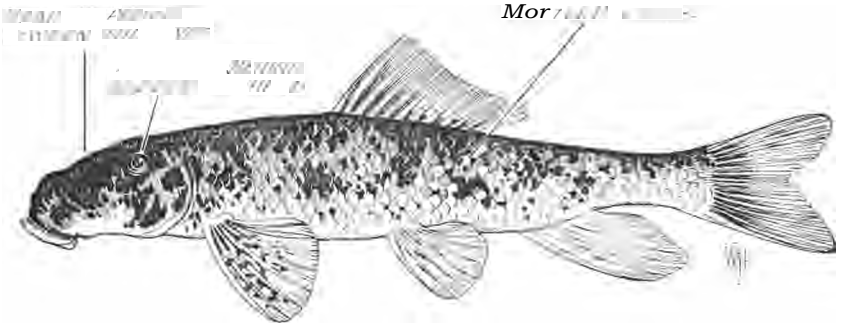
The general body shape of the redhorse is somewhat similar to that of the spotted sucker and the size in length may range up to 30 inches. These species are largely restricted to the eastern portion of the State. Possibly, the black redhorse enjoys greater distribution since it is common in both the Arkansas and Red river systems. Redhorses prefer clear waters and are not often able to withstand impure or very turbid waters. Their food consists mainly of water snails, mollusks and aquatic larvae. A large quantity of mud is often found in their stomachs which is supposedly taken during feeding.

SUCKER FAMILY — (Concluded)

Hog sucker — ***Hypentelium*** *nigricans*
(Hogmolly, Stone-Roller)

The hog sucker is the ugly duckling of the sucker family. Its head is large and appears out of proportion since the eye is far behind the middle of the head. The maximum length of the hog sucker is approximately two feet. It is found in swift rapid streams as well as in our lakes but rarely frequents muddy water. It is fairly common in some of the eastern Oklahoma streams. It has also been collected from Grand Lake and Lake Texoma. The hog sucker seeks its food in the more rapid parts of streams. Its anatomical structures are designed for pushing about stones on the bottom and sucking up the ooze and slime thus exposed, together with the insect larv&e upon which it mainly depends for food. The hog sucker has a habit of resting quietly, supported by its paired fins, on the bottom of a stream or lake. The coarsely mottled colors of the body serve well to conceal it among the surrounding stones.

Little is known about the spawning habits but apparently it spawns in the streams in early spring.



Hogsucker

Common sucker — *Catostomus commersonni*
(Five-Scaled Sucker)

The common sucker may reach a length of 22 inches and a weight of five pounds. It is essentially an inhabitant of the creeks and small rivers of eastern Oklahoma. Like the hog sucker, it is more likely to be abundant on a rock or sand bottom rather than on a completely muddy bottom. It also has a decided preference for clear swift waters. The diet consists mainly of mollusks as well as insect larvae.

Spawning occurs sometimes in April or early May in the riffles and swift flowing waters.

Minnow Family

(Cyprinidae)

The name minnow is often incorrectly used since it is usually applied to mean "all small fish." Fish workers reserve the name "minnow" for members of the family Cyprinidae which includes over 40 species found in this State. Members of this family include the numerous shiners, dace, chubs, carp and goldfish. The family is one of the largest and most complex of the fish families found in Oklahoma.

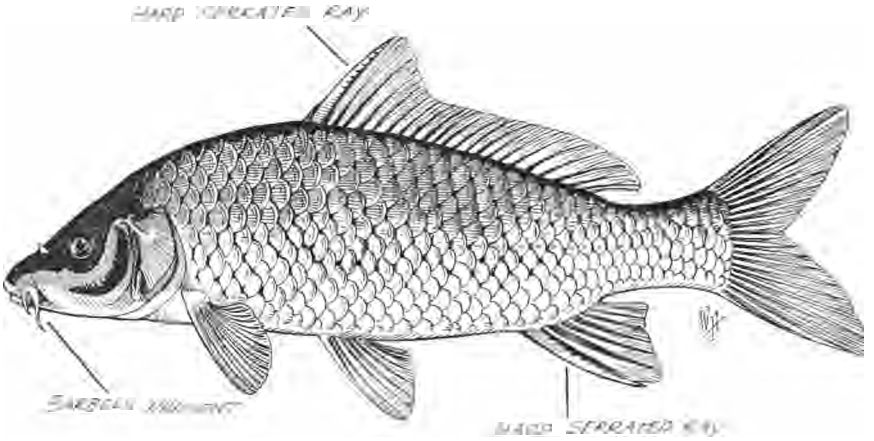
Minnows are common in practically all waters of the State and consequently the habits or habitats of each species may be as variable as for separate families. Minnows are extremely important in the over-all economic picture of our lakes and streams and of course, they are extremely useful to the angler as a form of bait. In many instances, the number of sport fishes that our waters can support depends upon the number of minnows present.

The species discussed are considered common and most important.

Carp — Cyprinus carpio
(European Carp, Mirror Carp, German Carp, Leather Carp)

The carp is a native of Asia and was introduced into Europe as early as 1227 and was introduced into England in the early part of the 16th century. The first successful introduction of carp to the United States was made in 1877 when R. Hessel of the United States Fish Commission brought 345 carp to this country. These were used as brood stock and in 1879 more than 12,000 young were distributed. Distribution in this country was discontinued in 1897.

In European countries the carp has been esteemed as a valuable food fish, but since its introduction into the United States it has probably never enjoyed such widespread popularity. In earlier years commercial fishery harvests of carp probably brought more money than the catches of all other fishes combined. The carp is often classified as a noxious fish since it has been charged by some biologists to play havoc with our game fish populations by consuming



Carp

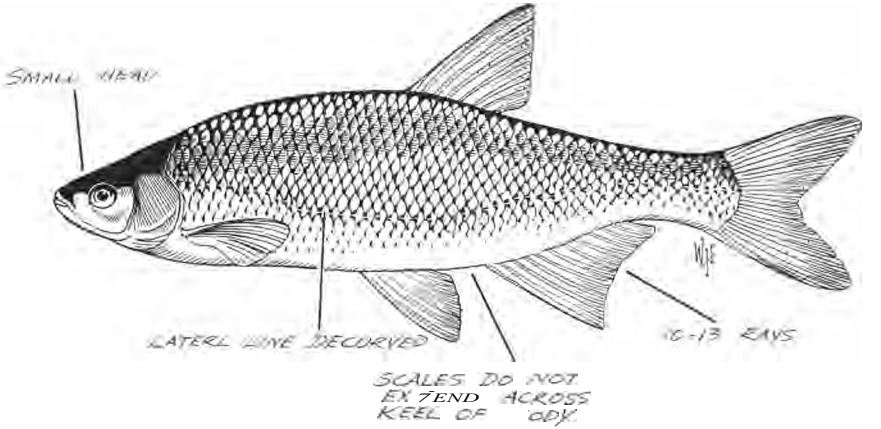
their spawn. This serious charge is not well founded since little work has been done to establish the fact that carp prey upon bass and other sunfish nests as well as upon their fry.

Three races (not species) of carp are distinguishable : (1) regular scaled form, (2) mirror carp, in which the body is partly bare and has two or three irregular rows of large scales along the back, and (3) leather carp which is scaleless. Although nearly three-fourths of the original stock which was brought to this country was either of the mirror or leather variety, the scaled type is by far the most dominant now, indicating that this type is better adapted to its habitat.

The carp is readily recognized by the two pairs of jaw barbels present on each side of the snout and also by the bony serrated dorsal and anal spines. Carp attain large sizes—specimens over 30 pounds are not uncommon, but the average size is more often between five and 10 pounds in weight. The carp is able to live under a wide variety of conditions and is able to withstand wide variation from the average habitat conditions. In general, the carp can be associated with rich, shallow, warm waters of Oklahoma — either lakes or streams. In our large artificial lakes they tend to concentrate in and around mud flat areas. Carp lends itself readily to artificial culture and in recent years has become a very popular bait for trotline fishermen. They are common in all areas of the State and are abundant in many of our larger lakes.

The carp is chiefly a bottom feeder utilizing organic material, aquatic insect larvae, crustaceans and mollusks.

Carp apparently spawn in shallow weedy water, usually during the month of May. The eggs are scattered over the vegetation, to which they stick, and the spawning activities are accompanied by much splashing and commotion on the part of both sexes. The eggs are small and a single female (three to five pounds in weight) may deposit from 300,000 to 700,000 eggs in a season.



Golden Shiner

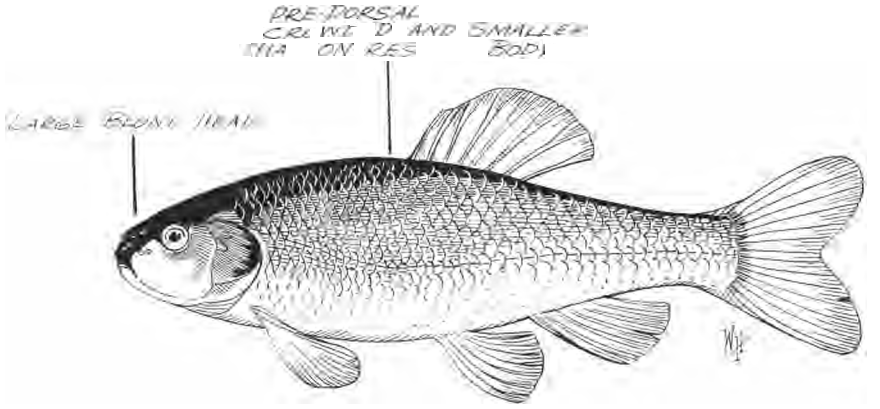
MINNOW FAMILY — (Continued)

Golden shiner — *Notemigonus* crysoleucas

The golden shiner is readily recognized by its rather deep body flattened from side to side. It is one of the larger minnows and may reach a length of approximately 10 inches. Its life span consists of several years, sometimes as many as five or six. The golden shiner probably shows a preference for lakes, but it is also common in many of our Oklahoma streams. It prefers shoal and weedy areas. This species does well in farm ponds and likewise can be readily cultured for bait by minnow raisers. However, some of the latter have found that the golden shiner is a little less hardy than certain other minnows. Fish managers often use the golden shiner as a forage species to be planted with bass fingerlings.

Animal plankton, insects, aquatic larvae, algae and snails are most often utilized as food.

Spawning is not confined to a short period of time but rather may occur at any time during the first two months of summer. Spawning occurs in weedy areas and aquatic plants are utilized since the eggs are adhesive and stick to them.



Fathead Minnow

Fathead minnow — Pimephales promelas

The fathead minnow is abundant in most Oklahoma lakes and streams. It thrives well in murky waters and can easily be propagated in culture ponds and farm ponds as a forage fish or as a bait fish. It is one of the best fish for pond propagation and is used almost exclusively in several of the State fish hatcheries as a forage fish for game fish culture. As adults, this species would average approximately three inches in length. This minnow does not ordinarily live longer than two years.

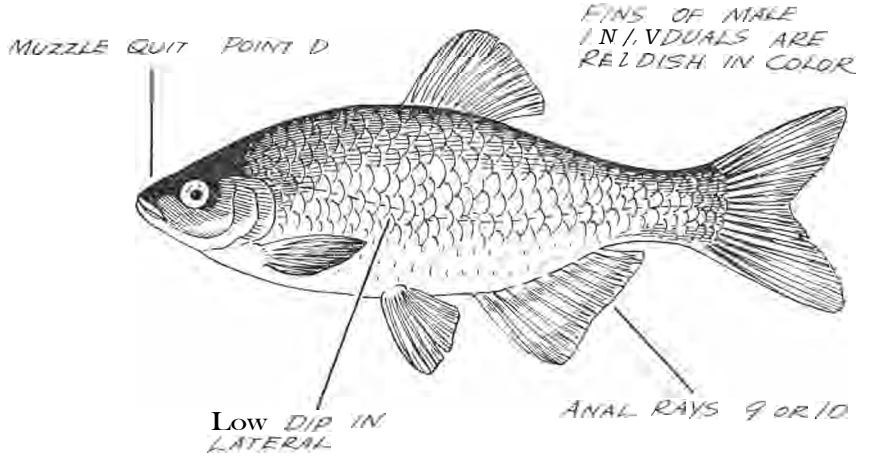
The food of the fathead minnow consists mainly of insect larvae, animal plankton and semi-microscopic plants.

Like the bluntnose, the fathead spawns on the under side of logs, hollow tile or other similar objects. Spawning occurs throughout a major part of the summer season.

Red shiner — Notropis lutrensis

The red shiner is probably one of the most abundant and widely distributed minnows in the Sttae. It is well adapted for lakes and most streams. The red shiner does particularly well in murky farm ponds, but is not as readily cultured by minnow raisers as the aforementioned species. The food consists of plankton.

The red shiner spawns throughout the summer months and requires aquatic plants or similar objects for deposition of its eggs.



Red Shiner

Fins of male individuals are reddish in color.

Bluntnose minnow — Pimephales notatus

The bluntnose is fairly widespread throughout Oklahoma in lakes and streams, however, it is particularly adapted for clear rocky streams. It lends itself to artificial culture and is readily sought as a bait minnow. This species can be grown in new ponds which have little or no aquatic vegetation in the water. The food consists of algae, plankton and organic matter which can be produced abundantly in culture ponds by fertilization of the water. The bluntnose attaches its eggs to the under side of floating boards, or inside hollow tile or logs placed in the shallow portions of the pond. One female can produce approximately 2,000 eggs per season.

This minnow does not ordinarily live longer than two years.

Catfish Family

(*Ameiuridae*)

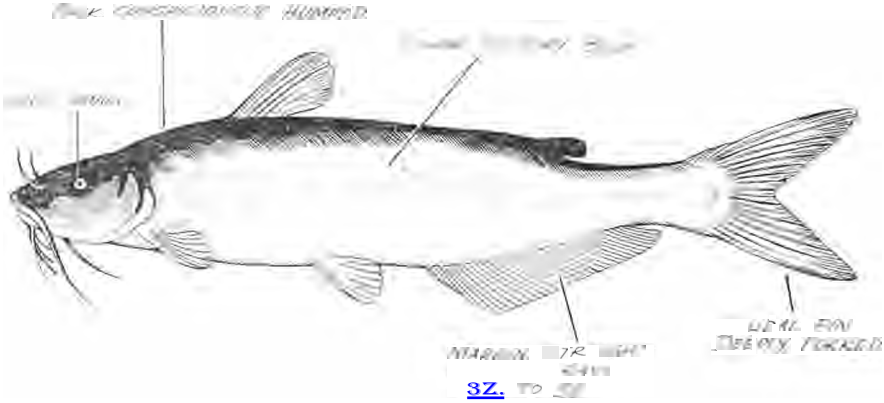
Blue catfish — [illegible]

(Fulton Cat, Chuckle-Headed Cat,
Hump-Backed Blue, High-Finned Blue)

The blue catfish is characterized by its rather high back and slender head and body. The spots on the body are very few or entirely absent. This species is one of the largest of the catfish. It has been known to reach a size of approximately 150 pounds. The average size, however, is usually around 20 pounds. The blue catfish is abundant in Lake Texoma. It seems to prefer deeper waters of the river channels coming out into the shallow back-waters in spring. Most of the blue catfish that are caught in Lake Texoma are from the Red River channel. The annual catch is comparatively high in this area. It is caught most often on trotlines baited with cut bait or large-size live minnows.

The blue catfish feeds principally upon insects, aquatic larvae, fish, crustaceans, fresh water mussels and other living or dead materials.

Little is known about its spawning habits in Oklahoma, although they are supposedly similar to other catfishes.

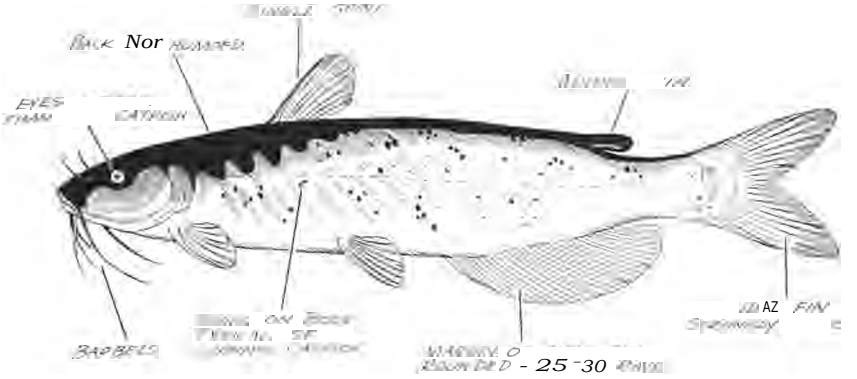


Blue Catfish

Channel catfish — [illegible]

(Southern Channel Catfish, Fiddler)

Typically, the channel catfish is a stream fish but through numerous artificial plantings, it is now common in all areas of the State. The body of the channel catfish is slender, scarcely compressed, and the back is very little elevated. The male individual, especially after the spots are lost, is often confused with the blue catfish just described. Note the prominent differences shown in the diagram. The channel catfish may reach a size of 20 to 25 nounds, however the average size is more often five pounds or less. This species



Channel Catfish

is one of the most adaptive of our Oklahoma fishes, since it may occur at times in habitats that are adverse to most other fishes. It may migrate upstream in swift water as it tends to seek out the channels and reacts positively toward currents. The channel catfish is sought by many anglers, and especially by trotliners who usually use a form of cut bait or small live sunfish.

The channel catfish feeds upon almost any organic material, dead or alive. Some of the more common foods in the stomach are fish, fresh water mussels, algae, pond weeds, snails, insects, and crayfish. The writer once found an adult mouse in the stomach of one specimen.

Spawning usually occurs during the latter part of May and in early June. Spawning areas are sought under large rocks and ledges, in logs or in holes swept out in steep mud banks. In our State fish hatcheries, earthenware kegs are provided for spawning. The average number of eggs spawned is usually around 10,000. The male drives the female from the nest soon after spawning and takes over the family duties until the young hatch.

Flathead catfish — P□□ □ □ □□ □ □□ □ □□ □ □ □□

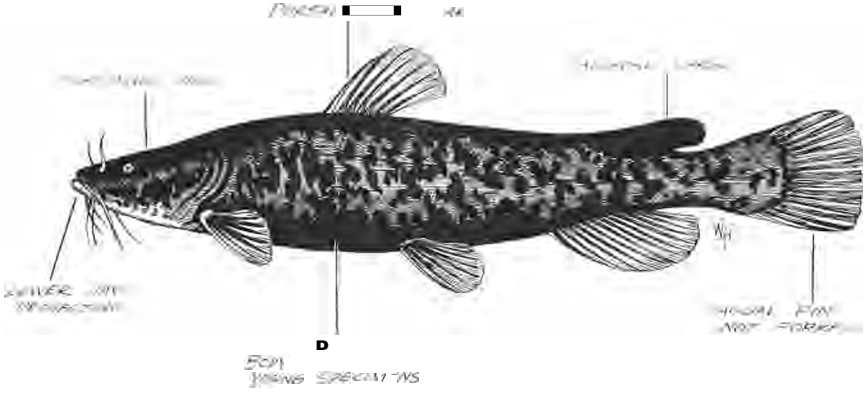
(Shovelhead Catfish, Mud Cat,
Yellow Cat, Goujon, Morgan Cat)

This species assumes its name from its very broad and flat head. The body is usually somewhat more stocky in form than the previous two species. It frequently reaches a weight of 50 to 75 pounds, but specimens have been reported to weight as much as 100 pounds. The flathead catfish is common in most of our larger impoundments and in many of our larger streams. Ap-

parently, it thrives in clear waters as readily as it does in murky waters. It lives and feeds on or near the bottom. It is regarded secondary to the blue and chanel ctfish as food by most anglers. However, the flathead catfish is one of the most sought after species for the commercial market.

Other fishes make up their principal food, but bottom organisms and organic materials are utilized.

Little is known of the spawning habits in Oklahoma waters, but it is assumed that spawning occurs during the latter part of May or in June.



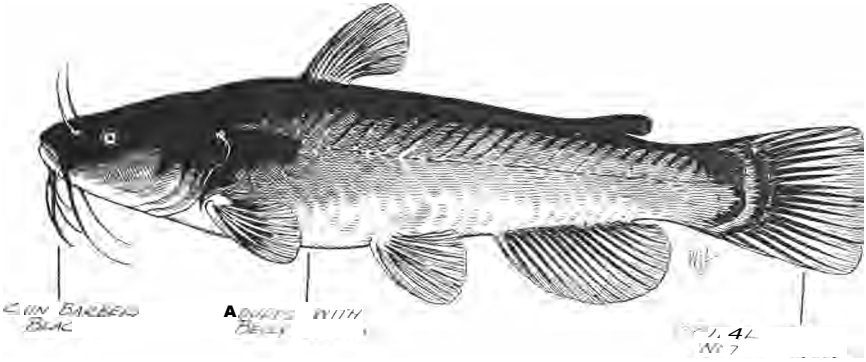
Flathead Catfish

Black bullhead — Ameiurus melas
Yellow bullhead — Ameiurus natalis
(Bullhead, Mudcat)

Several important characteristics distinguish the black bullhead from the yellow bullhead. The anal fin of the black bullhead is short and the fin rays number from 17 to 19. The chin barbels are complete black. The anal fin of the yellow bullhead is longer and is made up of 26 fin rays. The chin barbels of the yellow bullhead are white or cream color.

The bullheads are somewhat small in comparison with other members of this family. The black bullhead does not often grow longer than 12 inches but the yellow bullhead may reach a length of 18 inches. The black bullhead is distributed over nearly every part of Oklahoma and is common in most areas. The yellow bullhead is also widely distributed but is not as common as the black. Bullheads seem to prefer muddy water and in general they are

dull and blundering fellows, fond of mud and grow best in ponds and rivers without current. They are very tenacious of life, having been found in water with little available oxygen and living for days buried in soft ooze.



Black Bullhead

The bullhead is considered by many sportsmen to be a common nuisance since it somehow often finds its way into small farm ponds that have never been stocked with fish from one of the State fish hatcheries. They are often a nuisance when present with the more desirable game species because they are so persistent in taking a baited hook. The bullhead can almost swallow a fish its own size and does not hesitate to tackle the largest. The flesh of the bullhead is very palatable and it serves as a food fish to many. Possibly the bullhead is unduly condemned because it could be a valuable fish for many small murky farm ponds that do not support other species.

These small members of the catfish family feed on an exceedingly wide variety of organisms both plant and animal. Foods such as insects, plankton, snails, small mussels, crayfish, algae and even garbage are often consumed.

Spawning probably occurs in late May or in early June. Nesting sites are sought similar to those of other catfishes. After hatching the young tend to school in rather tight masses and consequently are easy prey to many of the predatory fishes.

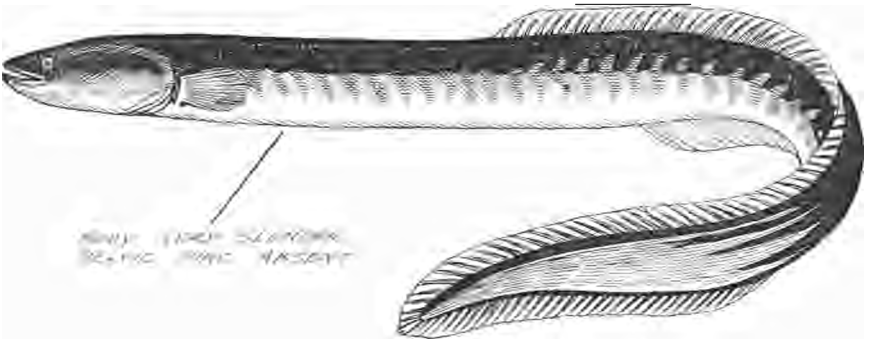
Eel Family

(Anguillidae)

American eel — *Anguilla rostrata*

There is usually some confusion attached to the mention of "eel." This probably results from the fact that the "lamprey eel" is a misnomer. However, there is little confusion if the two species can be seen together.

Eels are rather widespread over the State, but they are nowhere common. The writer has witnessed specimens taken from the Lake Texoma area. No



American Eel

sizes for eels from Oklahoma have been recorded but elsewhere they seldom exceed four feet in length or weigh more than five or six pounds.

The eel is a voracious eater and is sometimes called a scavenger in its feeding habits. Varied types of organisms are consumed, but dead fishes seem to be preferred. Since the eel is nocturnal it is occasionally taken by trotline or by hook and line at night.

The life history of the eel is one of the most interesting of all fishes. Although it is a fresh-water fish most of its life, it must migrate to the sea to reproduce. Spawning is said to occur only in the warm waters of the Atlantic Ocean. After spawning in the fall both males and females die, never returning to fresh water. The young return to fresh water at the beginning of their second spring of life and remain there until they are mature. Eels taken from any of our large reservoirs have been trapped there at the time of impoundment and consequently cannot freely migrate to the sea to spawn.

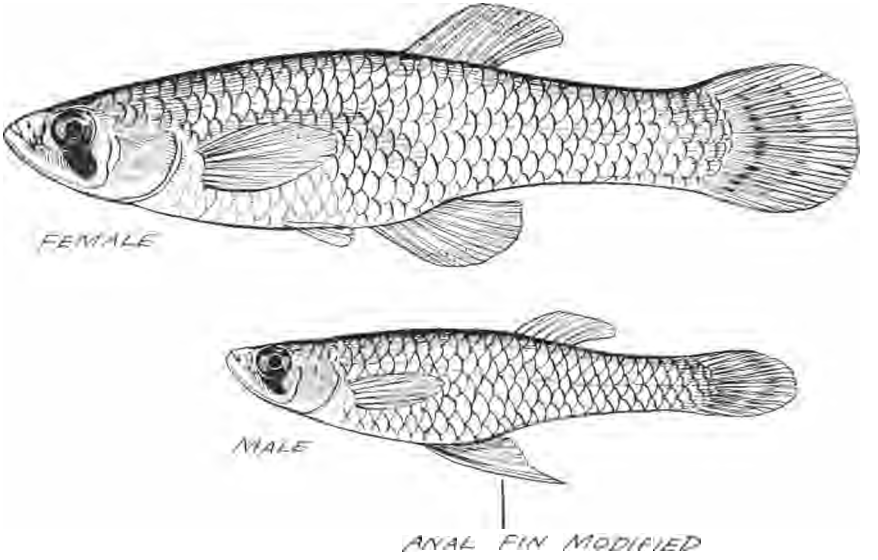
livebearer Family

(Poeciliidae)

Mosquitofish — Gambusia affinis

Members of this family are rather unique in that they bear their young alive. Certain of the tropical species are best known for this habit because they are favorites with many aquarists. The mosquitofish is common in most areas of Oklahoma, particularly in streams and small lakes. It is best known for its surface feeding habits and predation on mosquito larvae or "wigglers."

Commercial minnow producers however often frown on the presence of this species in their culture ponds. Mosquitofish are difficult to eradicate and do not readily sell as a bait species.



Gambusia

Bass Family

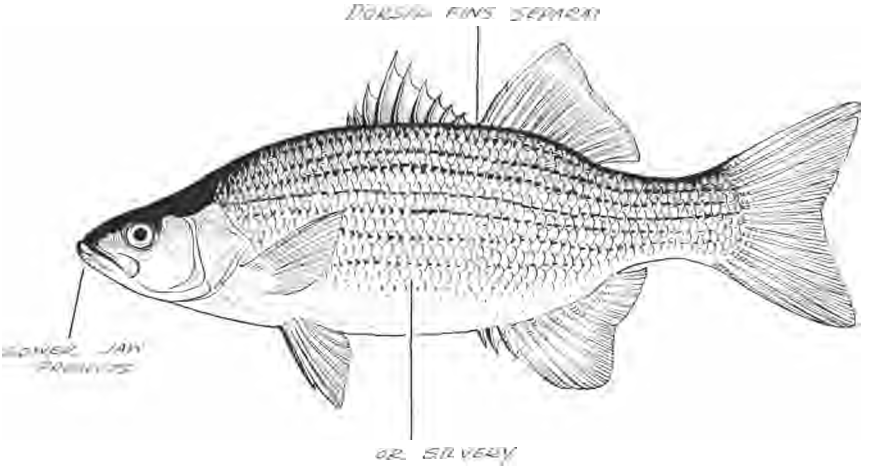
(Serranidae)

White bass — Morone chrysops
(Sand Bass, Striped Bass)

Most members of this family are tropical and sub-tropical marine fishes, however there are a few that do breed in fresh waters. The white bass is the only member of this family sufficiently common in Oklahoma to warrant mention. Other species such as the largemouth black bass, spotted black bass, smallmouth black bass and rock bass are not members of the true bass family, but rather belong to the sunfish family. The yellow bass, the only other member of this family that is found in the State, does exist in Van's Lake near Muskogee, Oklahoma and in oxbows along the Red River.

In more recent years the white bass has become one of the most popular "sport" fishes in Oklahoma. It has existed naturally in the State but never in any great numbers until the construction of certain of our large reservoirs. The success of artificial transplantings has attributed greatly to its increase in abundance. Thus far there is every indication that the white bass does not thrive in small ponds. This species does not adapt itself to artificial propagation and thus transplanting stock must be obtained from natural sources. The white bass is common in most areas of Oklahoma with particularly large concentrations in Lakes Texoma, Grand, Overholser, Hefner, and Duncan. The white bass is a relatively fast-growing, short-lived species. Here in Oklahoma it is not known to live longer than four years. The known record size is a weight of four and three-eighths pounds and a total length of 18½ inches.

White bass usually travel in schools composed mostly of fish in the same age group. The adults seem to prefer the open waters over sandy shoal areas



White Bass

and exhibit no preference for the still areas. The young are found in shallower water but do not seem to seek protection from open wind-swept shore areas.

The white bass is readily taken by trolling with small artificial plugs or "spinners." During the spring spawning period it is more readily taken on minnows in the lake arms and tributaries.

The diet of this species is made up of fish, insects and crustaceans. The young feed mostly on insects and crustaceans. The shad is a favorite food of the adults. There is such a commotion on the surface of the water when the white bass "hit" a school of shad that they can be readily located by the fishermen.

The white bass is very prolific and it is not uncommon for a single female to produce from 600,000 to one million eggs at one spawning. The eggs are scattered at random in several feet of water where they may adhere to weeds or debris. When tributary streams are available the white bass prefers to migrate upstream to spawn.

Sunfish Family

(Centrarchidae)

Largemouth bass—Micro pterus Salmoides

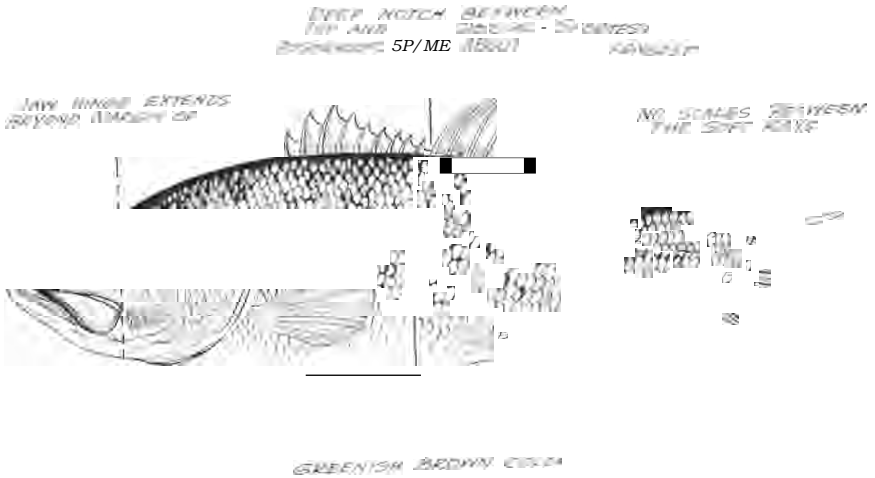
(Lineside Bass, Black Bass)

The largemouth bass is probably the number one sports fish in Oklahoma. It is present in nearly every lake and stream in Oklahoma as a result of numerous yearly plantings, and is quite abundant in our clear lakes and streams. The largemouth bass has a preference for warm quiet waters of lakes or the sluggish portions of streams. It frequents waters in or around weed beds, submerged logs, stumps or other under-water objects. It seems to be more or less solitary by choice as an adult, however, the young fingerlings quite often travel in loose schools through aquatic weed beds.

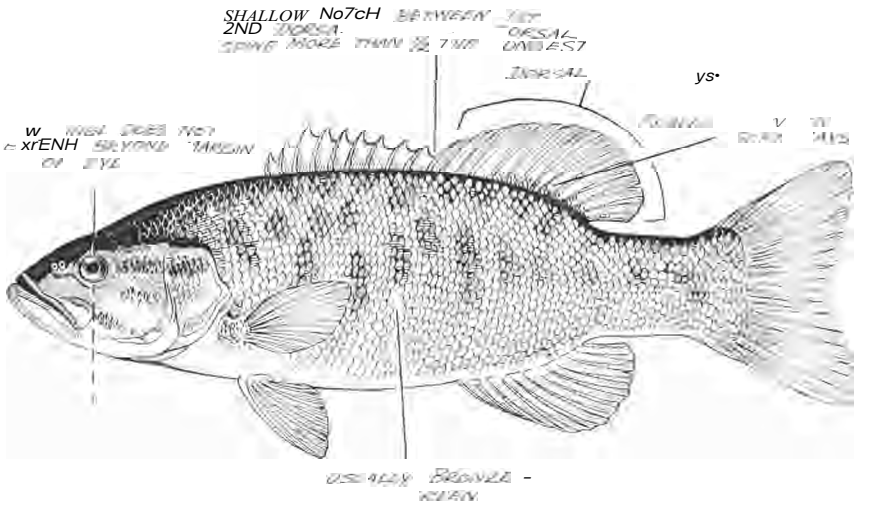
The maximum size for the largemouth in Oklahoma is probably somewhere around 10 pounds, however, the average size would be more nearly around two pounds in weight.

In the fry and early fingerling stage, this species exists largely upon plankton, aquatic insects and larvae. As the fish grows older, its food habits change to more of an insect diet and eventually to a diet of fish. The largemouth bass is considered one of our present most predatory fishes and is quite often stocked in ponds and lakes where other sunfish populations exist.

The largemouth bass prefers to spawn over gravel which is swept free from silt with the tail. A female weighing one pound is expected to spawn approximately 15,000 eggs. The male fish guards the nest until the fry have emerged and scattered.



Largemouth Bass



Smallmouth Bass

Smallmouth bass — ***Micro***pterus dolomieui
(Brownie, Bronze Bass)

The smallmouth bass is restricted to certain areas of eastern Oklahoma, namely Mountain Fork River and tributaries of the Grand and Illinois rivers. The smallmouth is quite abundant in the Illinois and its tributaries. The size of this bass averages considerably less than the aforementioned species and Oklahoma specimens seldom weigh more than two pounds. The smallmouth bass prefers cool, clear streams and lakes. Pound for pound, the smallmouth bass is said to match the gaminess of any other fish.

The young feed upon plankton organisms much as does the largemouth. The adult smallmouth, however, prefers crayfish and small bottom-dwelling fishes.

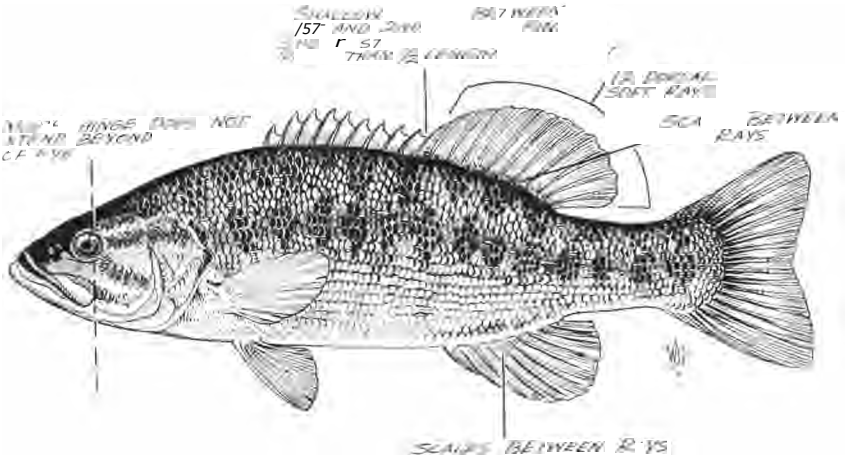
It spawns during the month of April and like other members of the family, the male prepares the spawning bed by fanning the silt from the gravel. A female weighing one pound is expected to spawn approximately 7,000 eggs. The male stands guard over the nest until the fry have hatched and scattered from the area.

Spotted bass — ***Micro***pterus punctulatus
(Kentucky Spotted Bass)

The spotted bass is quite common in most areas of Oklahoma and occurs naturally in such areas since it has not been dispersed by artificial plantings. It is especially abundant in Grand Lake. The spotted bass is often erroneously called the smallmouth black bass. The spotted bass in Oklahoma reaches a

maximum size of about five pounds. It seems to show a preference for the clear lakes and streams. Its habitat preference is somewhere between that of the smallmouth and the largemouth bass.

The food habits and spawning habits are similar to those of the largemouth bass.



Spotted Bass

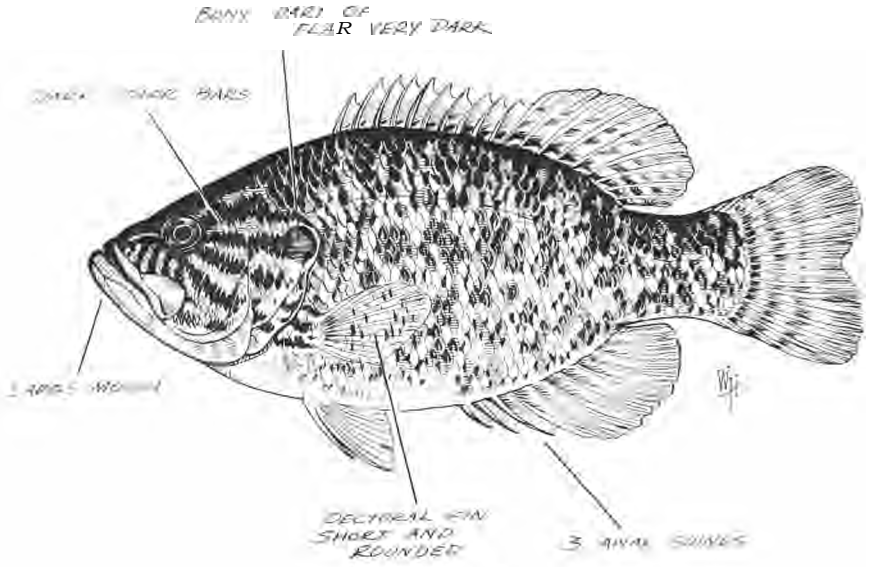
Warmouth — Chaenobryttus coronarius

(Warmouth Bass)

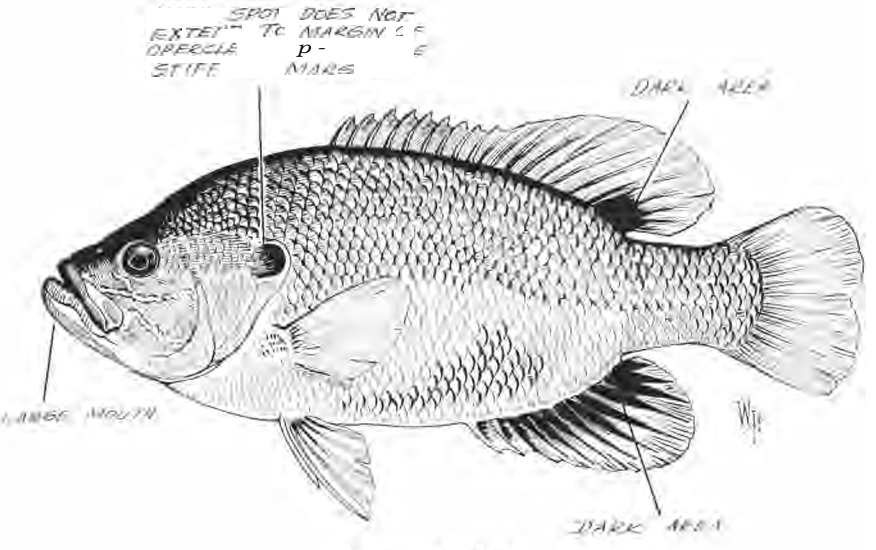
The warmouth can be distinguished from other small pan fish by the presence of teeth on the tongue. Typically, the warmouth is rather short in length and heavy bodied. It may possibly reach a length of from six to eight inches, but individuals longer than four inches are rare. The warmouth is present in all areas of Oklahoma because of numerous plantings from State and Federal hatcheries. It is found in both lakes and streams, but is far more numerous in our lakes. It thrives in both clear and murky waters and is often associated with dense beds of aquatic plants, though it does not shun muddy bottom areas. The warmouth is of little value to the sportsman since it does not ordinarily attain a desirable size.

Its food consists of aquatic insects, plankton organisms, worms and small fishes.

The warmouth is said to spawn in isolated clearings among dense growths of aquatic vegetation.



Warmouth



Green Sunfish

Green sunfish — Lepomis cyanellus
(Goggle Eye, Black Perch)

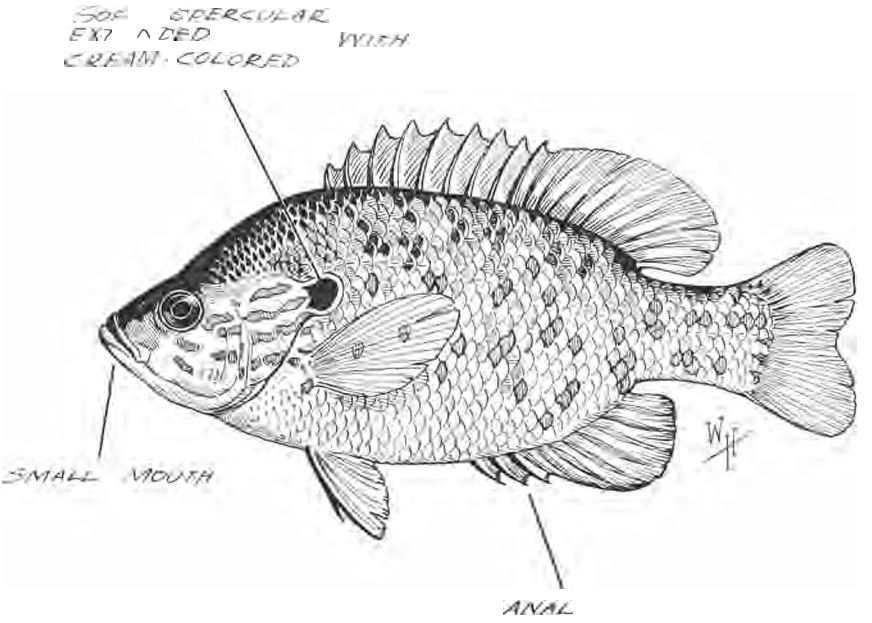
The green sunfish is probably the most common of any of our sunfishes as it is found in practically all ponds, lakes, rivers, streams, and small creeks. It seldom reaches a catchable size except in certain eastern areas of the State where it may reach a length of eight inches and a weight of approximately one pound. It readily overpopulates in many of our small lakes and ponds. This sunfish apparently has little preference for a type of water but it does seek out rocky areas of streams and lakes.

Its food consists mainly of plankton, insects, crayfish and other small fish.

Spawning takes place during early spring but may extend into the summer. An individual female does not spawn more than once during the season but the one spawning period may occur at any date during the warm months.

Orangespotted sunfish — Lepomis humilis

This species is widely distributed over Oklahoma but is most common in the more central and plains streams, ponds and lakes. It seldom reaches a size of more than four or five inches in length and is of no commercial value except as a food fish for predatory species.



Orangespotted Sunfish

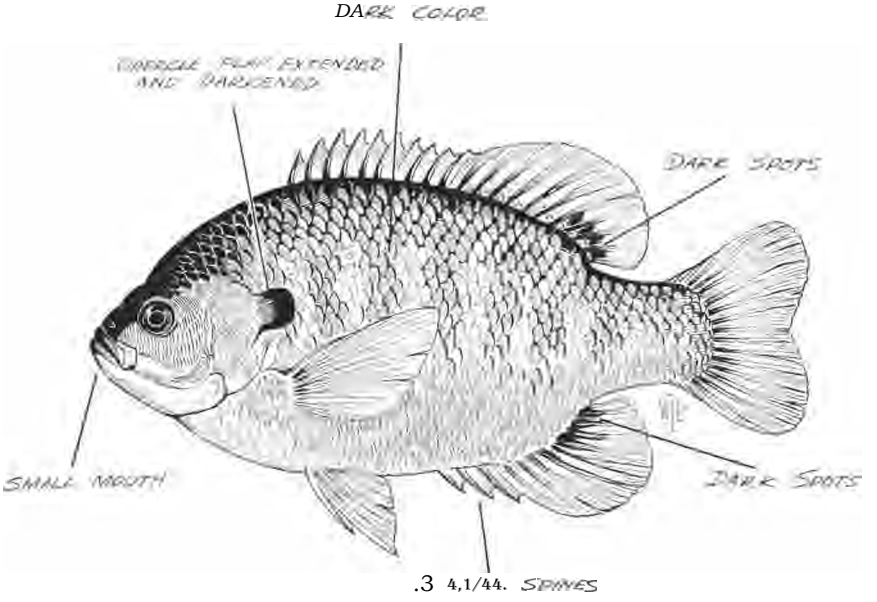
Its food consists of plankton, small aquatic insects, small crustacea and occasionally small fishes.

Like the green sunfish, the orangespotted sunfish nests in colonies and the height of the spawning season occurs in early spring but spawning may occur even in July or August. A female four and one-quarter inches long is capable of spawning approximately 5,000 eggs.

Bluegill — *Lepomis macrochirus*

(Bream)

Because of widespread plantings from State and Federal hatcheries, the bluegill is present in practically all Oklahoma waters. It is especially abundant in ponds and lakes. Occasionally, the bluegill reaches a length of 12 inches,



Bluegill

but it is prone to overpopulate in our smaller ponds and lakes, and most individuals are below catchable size. The bluegill exhibits a preference for weedy lakes that have an abundance of deep water, however it will thrive in other varied habitats. The adult bluegill shows a preference for the deep waters while the young frequent shallow weedy areas.

The food consists of aquatic insects, crayfish, plankton, small fish, and occasionally bits of aquatic plants are utilized. The latter may be taken incidentally while capturing other food.

Spawning first occurs around the middle of April in Oklahoma and is accomplished on sand and gravel shoals in small depressions or nests. The nests are usually close together in colonies and are built and guarded by the males. Spawning may extend into July and August. A female five and one-half inches in length can spawn approximately 10,000 eggs.

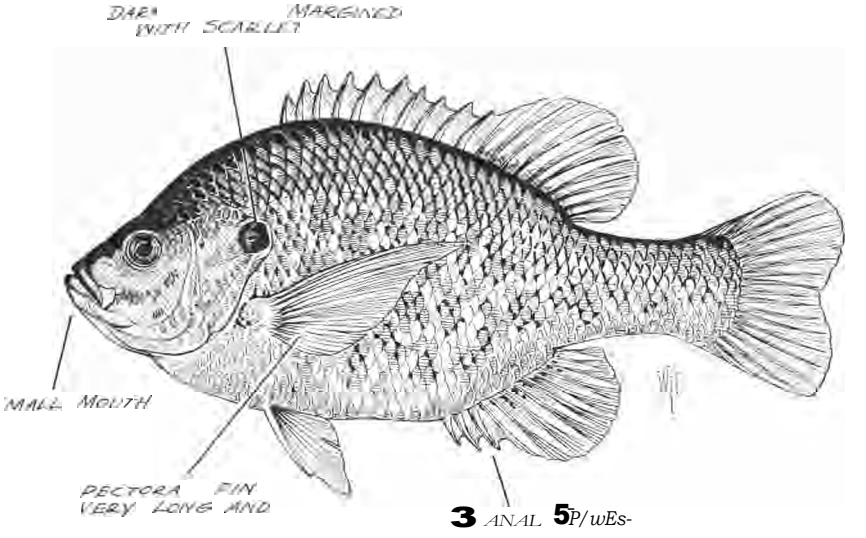
Redear sunfish — Lepomis *microlophus*

(Shell-Cracker)

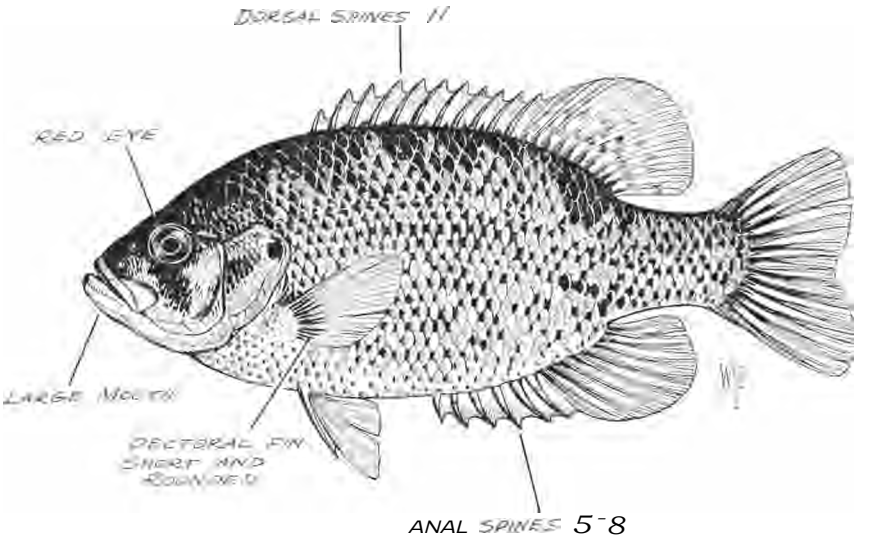
The redear sunfish has become very widespread through artificial plantings from our State fish hatcheries. This fish was introduced from Texas and does very well in ponds and lakes. It is present in streams but its numbers are limited. The redear occasionally attains a length of approximately 12 inches and a weight of one and one-half or two pounds. It does not overpopulate itself as readily as does the bluegill and in the same age groups, the redear usually averages slightly larger in size. Its life habits are very similar to those of the common bluegill, however the redear sunfish seems to prefer the deeper areas of ponds and lakes and is caught from these areas more readily by fishing deep with redworms.

Its food consists of plankton, bottom organisms, and occasional small fishes.

Spawning occurs in early spring and like other sunfish, the nests are constructed and guarded by the male.



Redear Sunfish



Rock Bass

Rock bass — ***Ambloplites*** rupestris
(Redeye Bass, Goggle Eye)

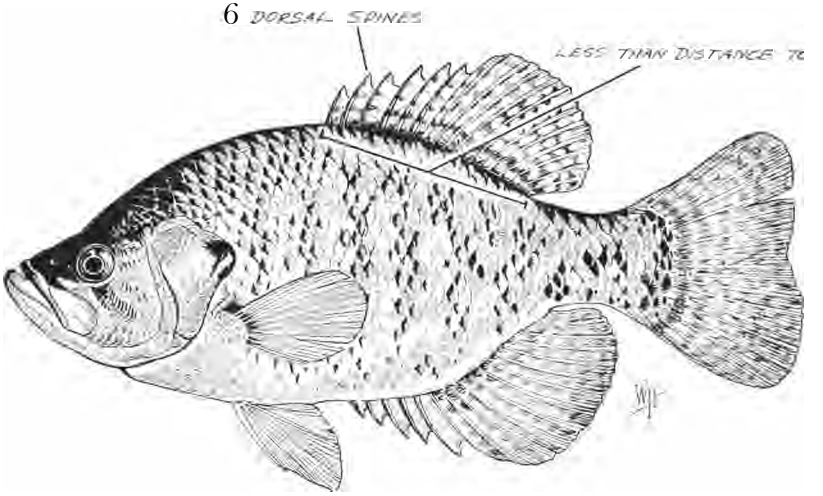
The rock bass is very similar in appearance to the warmouth and is often confused with this species. The rock bass is not at all common, being found in the Grand and Illinois river systems and possibly in certain other eastern areas. It is fairly abundant in the clear and rocky lakes and streams of eastern Oklahoma. Its habitat requirements are similar to those of the smallmouth and it is found in many of the same areas. The rock bass may reach a size of approximately 12 inches in length.

Its food consists of plankton, aquatic insects, crayfish and small fishes.

Spawning takes place in April and May. The rock bass constructs its nest on a gravel bottom, usually located in an area where there is a slight current. A one-half pound female can spawn approximately 4,000 eggs.

White crappie — Pomoxis annularis
Black crappie — Pomoxis nigro-maculatus
(Calico Bass)

The crappies are very similar in appearance, however the length of the dorsal fin is a very good characteristic for distinguishing one from the other (see diagram) . The white crappie is very widespread throughout the State and is present in most ponds, lakes, streams and rivers. The black crappie is not widely distributed and seems to be less tolerant to muddy water than the white. The maximum size for Oklahoma crappie is approximately three pounds, but specimens this size are fairly rare. The crappie readily over-populate waters and consequently many lakes contain large numbers of runty, stunted fish. The white crappie is one of our best large-lake fishes since it can

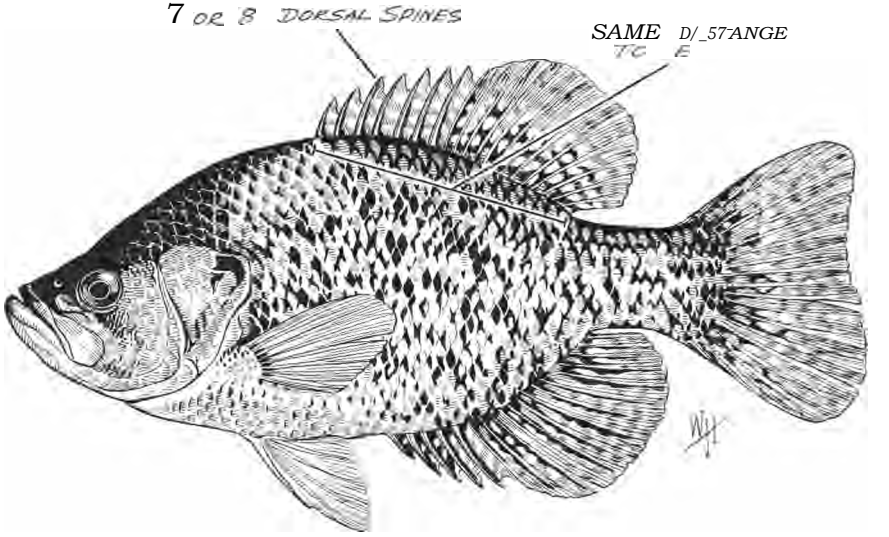


White Crappie

be taken by the angler throughout the year. Fishing piers, brush shelters and other similar submerged objects seem to attract this species and consequently brush shelters are often introduced into a lake as a means of stepping up the harvest of this fish.

Crappie food consists mainly of aquatic and land insects, crustaceans and small fishes. The crappies are especially fond of Mayflies.

Spawning occurs during April and the nests are similar to those of other members of the sunfish family. A female seven and one-half inches in length is able to spawn approximately 14,000 eggs.



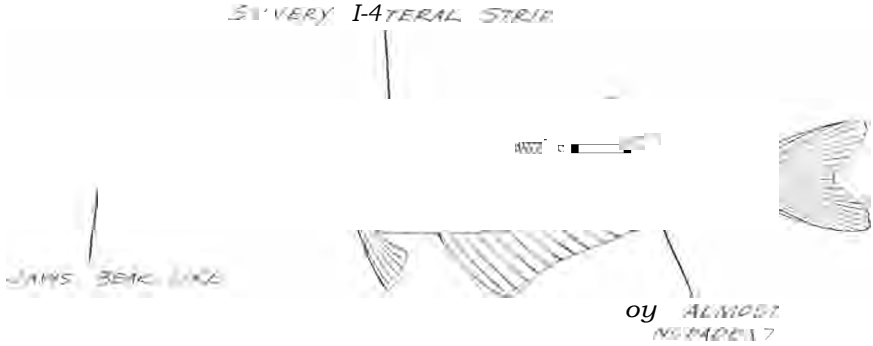
Black Crappie

Silverside Family

(Atherinidae)

Brook **silversides — *Labidesthes sicculus***
(Skipjack)

The silversides, like many other fishes that are "minnow size", does not belong to the true minnow family. This species is included because of its widespread distribution throughout the State and because of its interesting features. As its name implies, it is silver in color and the body is almost transparent. It is a surface swimmer and any disturbance often sends it jumping into the air for short distances. The average size of the adult silversides is approximately three and one-half or four inches, however a length of six inches has been recorded. It is seldom used for bait since it is very tender and will not remain on a hook. Plankton constitutes the principal food.



Brook **Silversides**

Drum *Family*

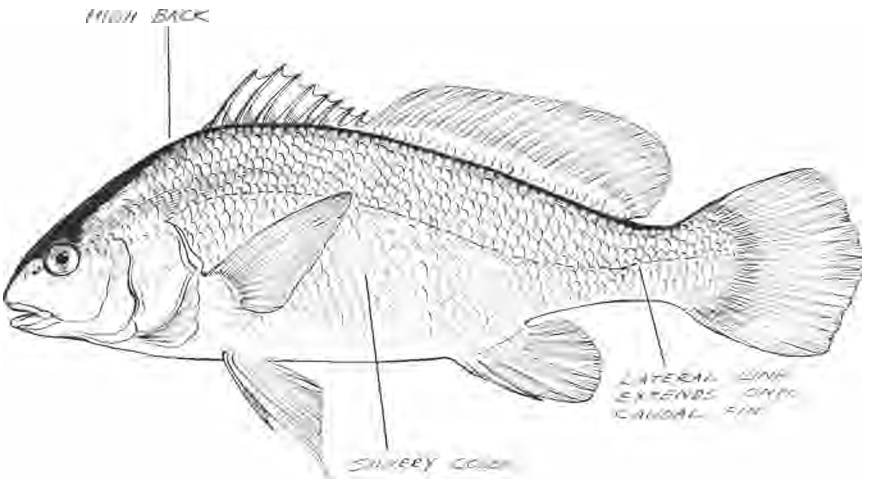
(Sciaenidae)

Freshwater drum — ***Aplodinotus grunniens***
(Sheepshead, Croaker)

Like the bass family, most members of the drum family are marine inhabitants. The above named species is common in most larger streams of the State and it is also very common in some larger lakes, especially Grand, Okmulgee and Overholser.

The usual weights of drum taken by anglers and commercial fishermen vary from one to ten pounds. Weights up to 100 pounds have been recorded in the past.

One of the most interesting features of this fish is its food and feeding structures. The smallest individuals feed upon microscopic organisms and as they grow older, aquatic insects and small crustaceans are taken. The adults feed almost entirely upon snails, clams and crustaceans. These hard-shelled



Drum

organisms are crushed by the drum's pharyngeal (throat) bones and molar teeth. Occasional small fishes are consumed.

The peculiar grunting noise produced by the drum is created by the vibrations of the wall of the air bladder. These strange noises can easily be heard whenever drum are in the area.

The drum is considered one of the better commercial food fishes, although it does not make up a large part of the commercial harvest. Its flesh it white, flaky and much like that of the sunfishes. Pond operators are finding another use from the drum, i.e., several individuals are introduced into the pond whenever crayfish are present in sufficient numbers to damage embankments by their burrowing. The crayfish is a favorite food of the drum.

Little is known concerning the time of spawning or the spawning habits. It is believed that spawning occurs during late April or early May.

REFERENCE MATERIAL

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Preliminary Materials for the Identification of Oklahoma Fishes (Mimeographed).	Moore, George A.
Miscellaneous Fishery Survey Reports (Mimeographed).	Oklahoma Game and Fish Department.

This booklet has been prepared for free distribution in Oklahoma at a cost of approximately 61/2 cents. It is a part of the educational services of your State Game and Fish Department paid for by hunting and fishing license fees.

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GLOSSARY

Adipose fin — Soft fleshy structure without rays or bones. Posterior to soft dorsal fin.

Air sac — Cavity in the dorsal part of the body containing air.

Anal fin — Single fin just posterior to vent.

Barbels — Fleshy hair-like filaments or "feelers" around the mouth region of the catfish and carp.

Caudal — Pertaining to the tail region.

Crustacea — A large class of arthropods consisting of such organisms as lobsters, shrimps, crabs, wood lice, water fleas, barnacles, crayfishes, etc.

Entomostraca — A primary division of crustaceans, usually simple and minute in size.

Fauna — Animals in general or all animal life.

Fry — The young or recently hatched brood of fish.

Habitat — The natural abode of a plant or animal — the particular location where it normally grows.

Heterocercal — Upper and lower lobes of caudal fin unequal with the end of the vertebral column upturned into the upper lobe.

Keeled — A ridge-like process, as said of the belly of certain herring-like fishes.

Larva — Early form, often worm like, of any animal that must undergo metamorphosis before it assumes adult characters.

Lateral line — The line usually visible on the side of the body. Supposedly organs of long distance touch.

Mollusk — A group of animals commonly called shellfish consisting of slugs, snails, mussels, clams, oysters and others.

Operculum — Structure that acts as gill cover.

Pectoral fins — The anterior paired fins near the operculum.

Pelvic fins — The posterior paired fins, ventrally located.

Plankton — Minute plant and animal life in the water, a source of food for juvenile fishes, especially.

Ray — Either a bony or cartilagenous structure supporting the membranes of a fin.

Serratures — A formation resembling the toothed edge of a saw.

Spine — Unbranched stiffened fin ray which is usually pointed and not segmented.