FISH OF ILLINOIS

Helpful Hints:

This study guide will focus on fish of Illinois. The Eco-Meet test may consist of multiple choice, true/false, fill in the blank, matching, identification, label a diagram, or short answer. Pay close attention to words in bold, diagrams, charts, and identification. Questions come directly from the study guide.

Kingdom
Animalia
Phylum
Chordata
Class
Osteichthyes (Bony Fish)
Order
***There are 18 orders of Illinois fish

Fish Classification

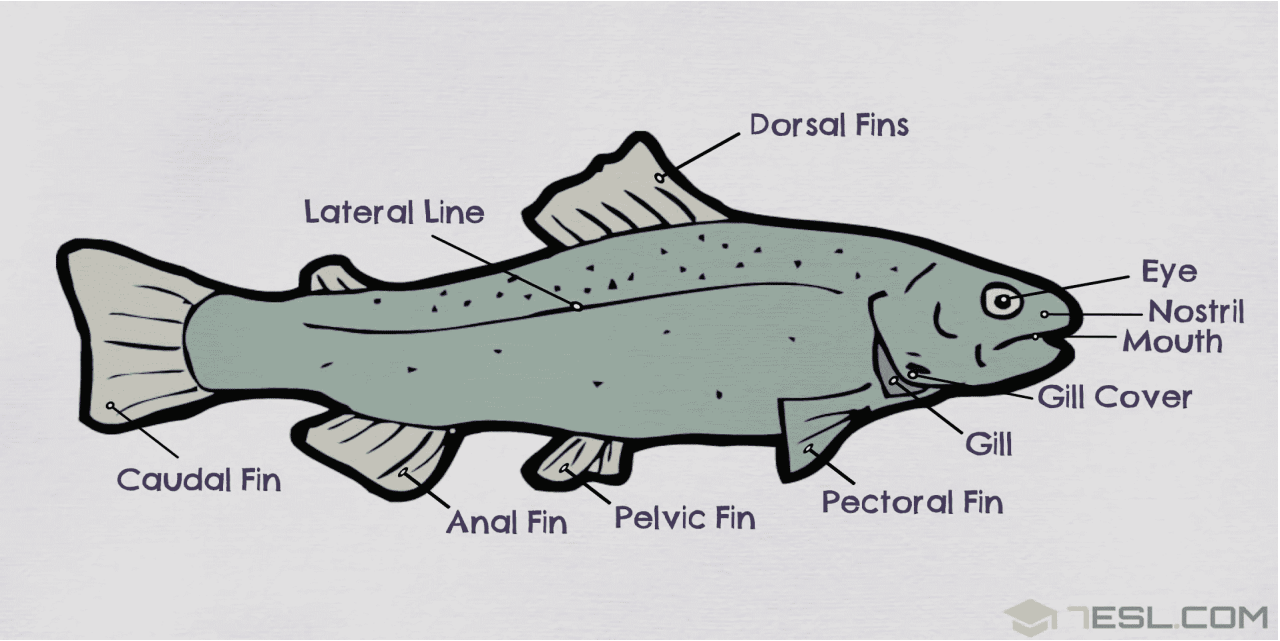
Fish are defined by 4 characteristics:

- Aquatic
- **Ectothermic** (C**old-blooded or** having a body temperature varying with that of the environment)
- Vertebrates (have backbones)
- Fins and gills throughout life

With the Earth being 97% water, approximately 41% of fish are fresh-water fish meaning they are found in streams, rivers, ponds, lakes, etc. The remaining fish are salt-water fish meaning they are mostly found in oceans.

Fish in Illinois belong to the Class: **Osteichthyes** or boney fish and the subclass **Actinopterygii** (ray finned fish).

Fish Anatomy



The main purpose of fins is balance and movement. Fish have two sets of paired fins: pectoral and pelvic. Fish also have three single fins: dorsal or back fin, caudal or tail fin, and the anal fin. These fins vary in shape and size in different species of fish and are used as one of the key characteristics in identification.

Pectoral fin: Fish use pectoral fins to scoot along the bottom of the body of water. In some fish the pectoral fin assists them in maintaining depth.

Pelvic fin: The pelvic fin assists the fish in going up or down through the water, turning sharply, and stopping quickly.

Dorsal fin: The dorsal fins serve to protect the fish against rolling and assist it in sudden turns and stops.

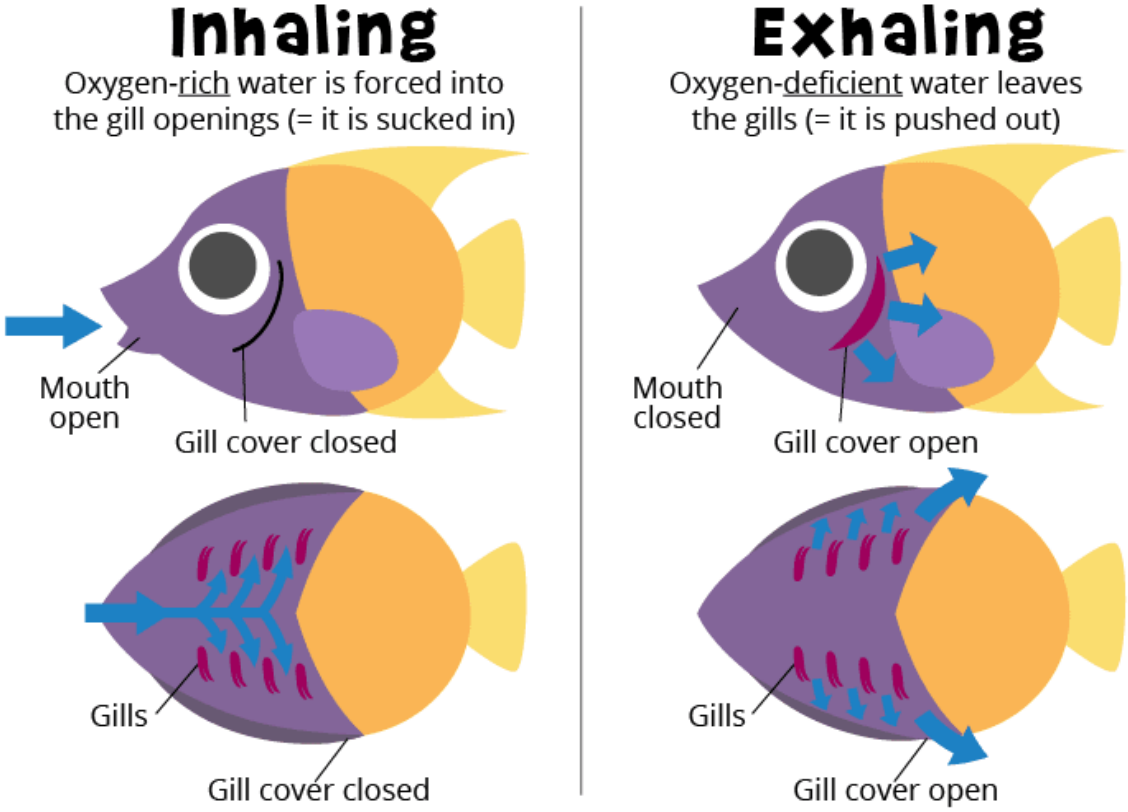
Caudal fin: Fish primarily uses its caudal fins to achieve a quick speed or propulsion.

Anal fin: The anal fin is used to stabilize the fish while swimming.

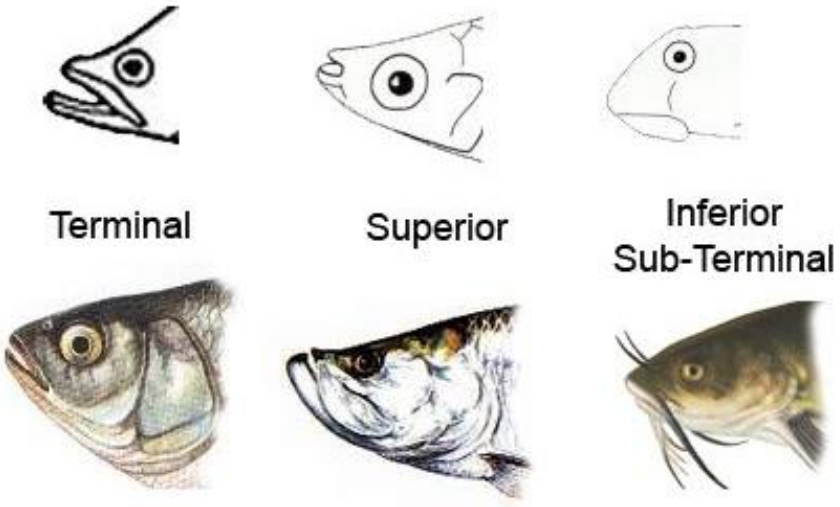
With the exception of the shark family, all true fish have a gill cover, also known as the **operculum**. The nostrils usually have two openings on either side and have no external ear openings.

Gill cover: Flaps of skin protecting a fish's gills.

Gill: Gill are the respiratory organ of fish and some amphibians, by which oxygen is extracted from water flowing over surfaces. The diagram below shows fish intake water through their mouth into their gills. The gills capture oxygen from the water as it flows over the gills and out. The process is quite complicated and involves artery walls (blood flow) and gill filament (fine branches of the gill) of the fish.



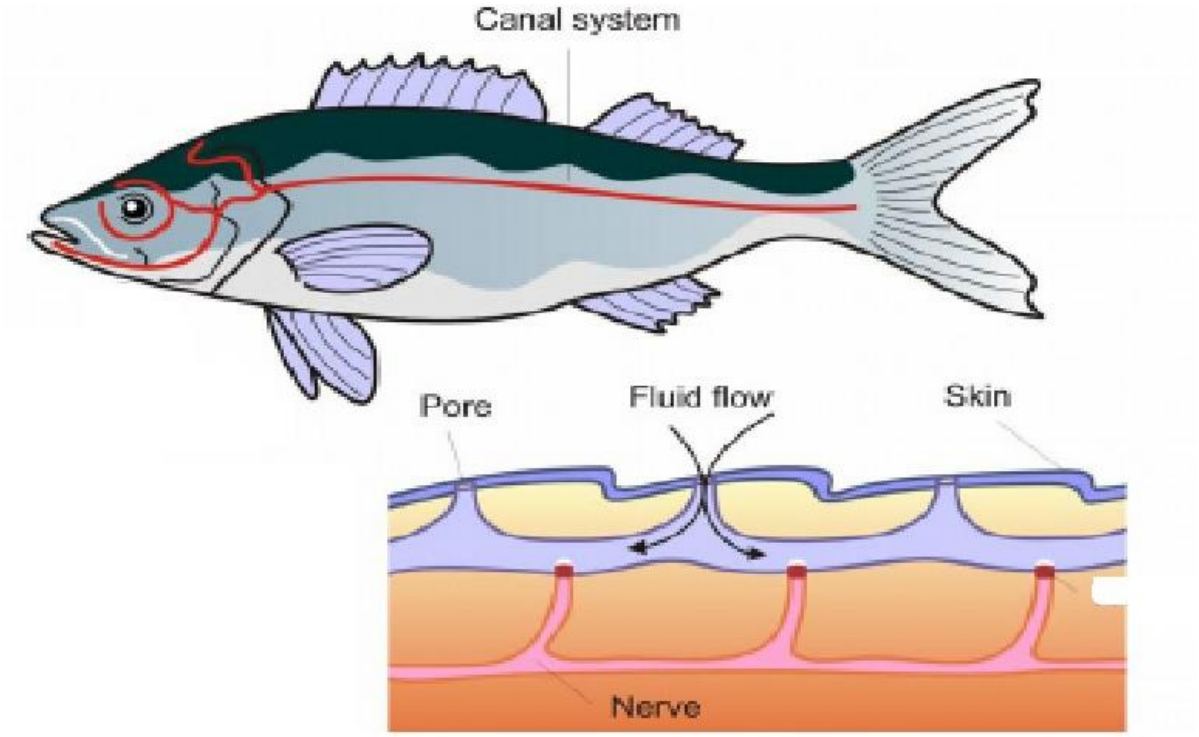
Mouth: Different species of fish have different types of mouths. Most freshwater fish have terminal mouths, but catfish have inferior or sub-terminal mouths.



Eye: Fish eyes are similar to the eyes of terrestrial vertebrates like birds and mammals, but have a more spherical lens.

Nostril: The nostrils of fish are used for the sense of smell.

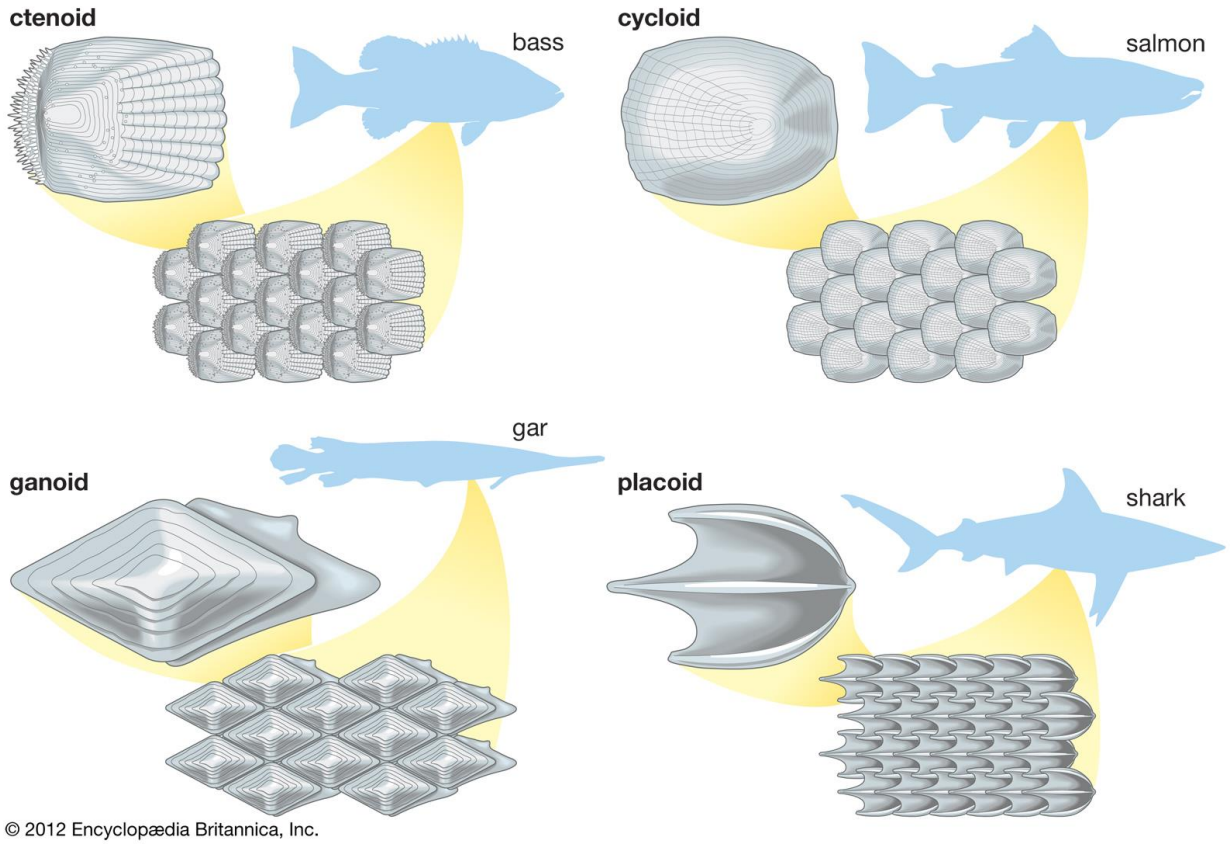
Lateral Line: The lateral line is part of the canal system of tactile sense organs located in the head and along both sides of the body. If there is movement or vibration in the surrounding water, the fish is able to detect changes because pores allow in water if there is a change in the water. The water is picked up by nerves in the fish alerting the fish to change in the water nearby.



Fish Scales:

The growth of the fish is marked by **annulus** or annual rings from in the scales. These rings are formed in much of the same manner as the annual rings in trees. These rings are sometimes microscopic in nature, but with the proper methods and equipment the age of a fish can be accurately determined by counting the number of rings.

The skin of most fish is covered with scales, except when they first hatch from their egg. The scales develop within the first year of life. Scales are classified into four major types: ctenoid, cycloid, ganoid, and placoid.



Ctenoid scales: Rough with comb like edges.

Cycloid scales: Similar to ctenoid scales except the free edge is rather smooth. Cyloid scales are found on the majority of fish.

Ganoid scales: Heavy, plate like scales of primitive fish.

Placoid scales: Tooth-like scales that give the skin a sandpaper roughness.

Check out this close up of a ctenoid fish scale!

Fish of Illinois (Specifically Lake Shelbyville)

There are approximately 200 fish in Illinois in 18 orders. This study guide will cover more common types of fish in the east central region of Illinois. Things to look at to identify a fish: fins, body color or pattern, and shape.

The order **Perciformes**, meaning Perch-like is the most common order of fish because it includes sunfish, like blue-gill, and bass. Most identifying fish will come from this order, but examples of the other orders are given as well.

Order: Perciformes - Perch-like

Family: Centrarchidae (sunfishes & bass)

Key identifier: at least three anal fins

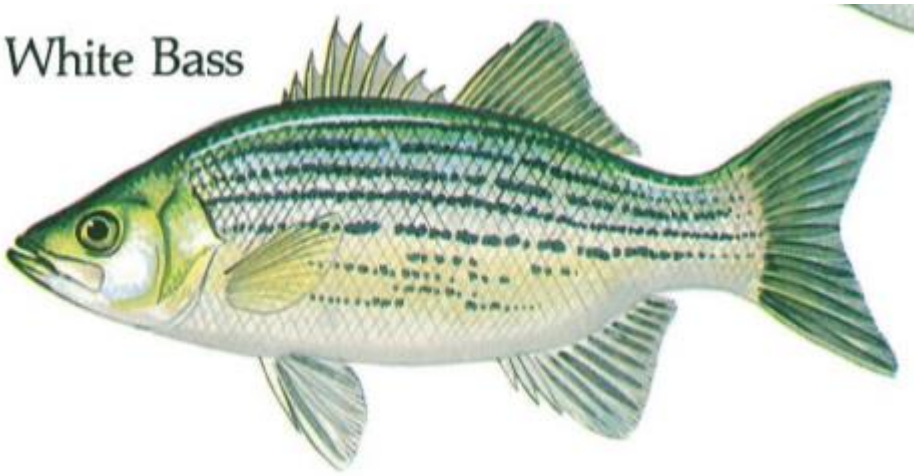
Bluegill

Bluegill: Distinguishing feature is their gill flap which is tinted dark blue to black. Orange coloration on the throat may indicate a male bluegill. Bluegill are the most abundant sunfish in ponds and lakes throughout Illinois. They prefer shaded cover to gorge on insects and their larvae.

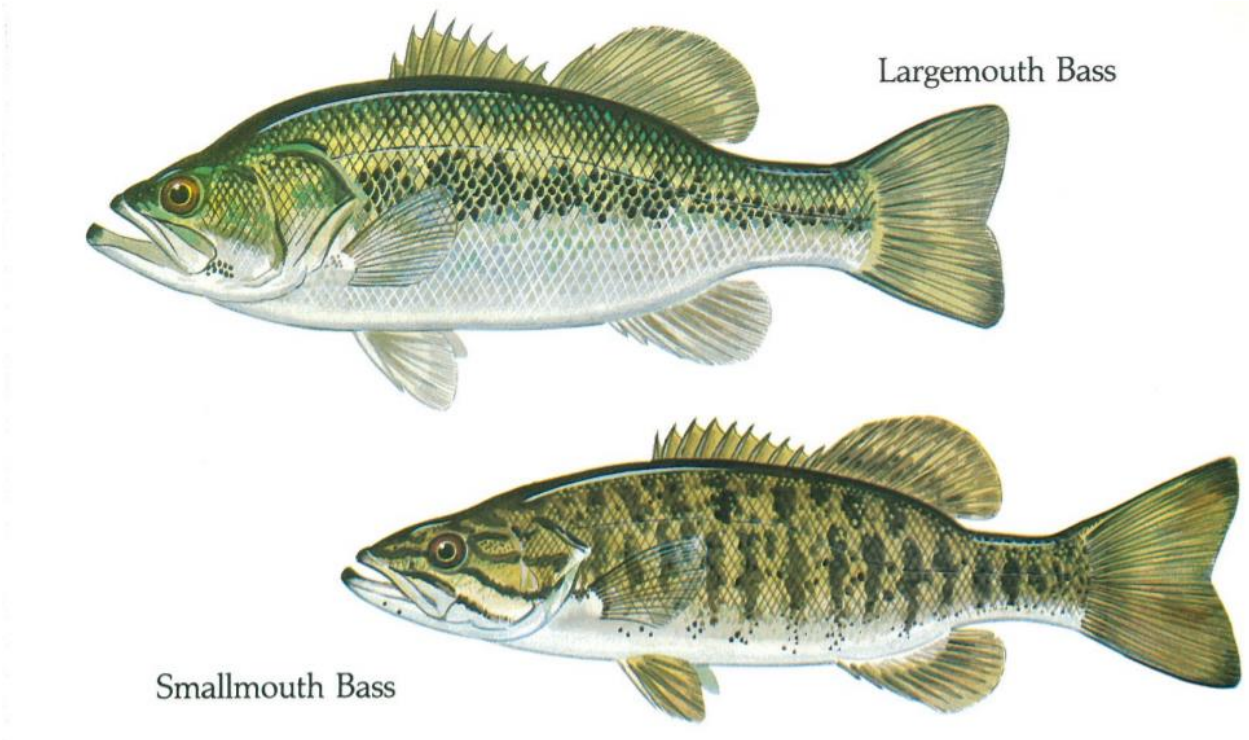
Black Crappie

White Crappie

Black & White Crappie: Pronounced crop-e. White crappie appear in almost all aquatic ecosystems except very small streams and ponds. Crappie's build a crude nest fanned out on the bottom of the pond that is usually guarded by the male (see picture right). Notice how there seems to be a circle in a different shade of color in the picture below? That is the crappie's nest. Female's deposit 10,000-180,000 eggs that can hatch in only three days depending on water temperatures!



White Bass: Travel in schools and their actions can be fast and furious. White bass have small teeth at the base of the tongue. During spawning season, females lay several hundred thousand eggs near the surface. The eggs sink, attaching to rocks, sticks, or vegetation near the bottom.



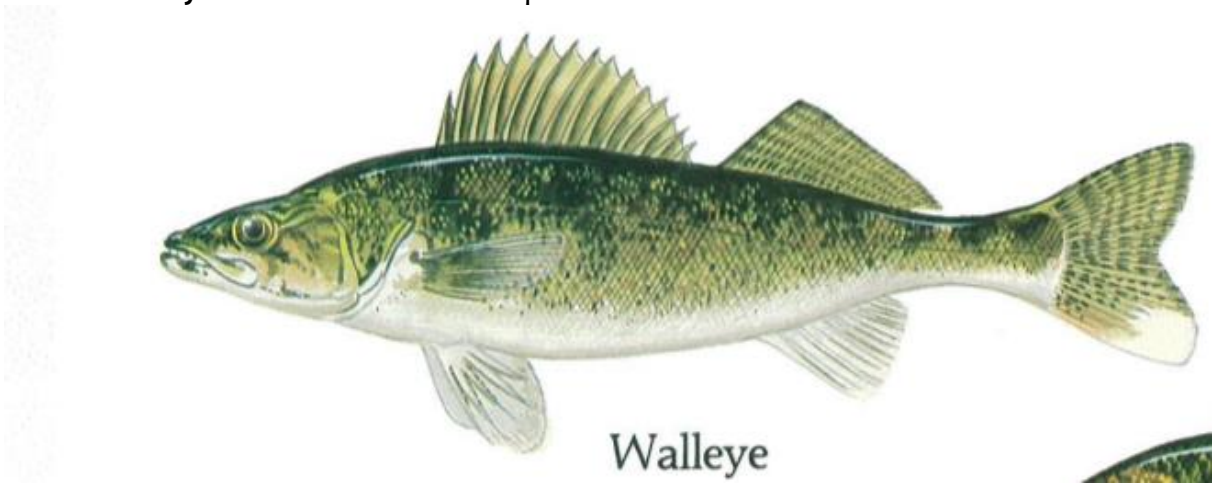
Largemouth Bass: Largemouth bass, is the largest member of the sunfish family and one of the most popular game fish as well. It's a night feeder who prefers insects, frogs, and other fish. Bass are tolerant of many waters and are found in most all aqutic ecocystems.

Smallmouth Bass: Smallmouth bass is similar to the largemouth other than size and other small variances.

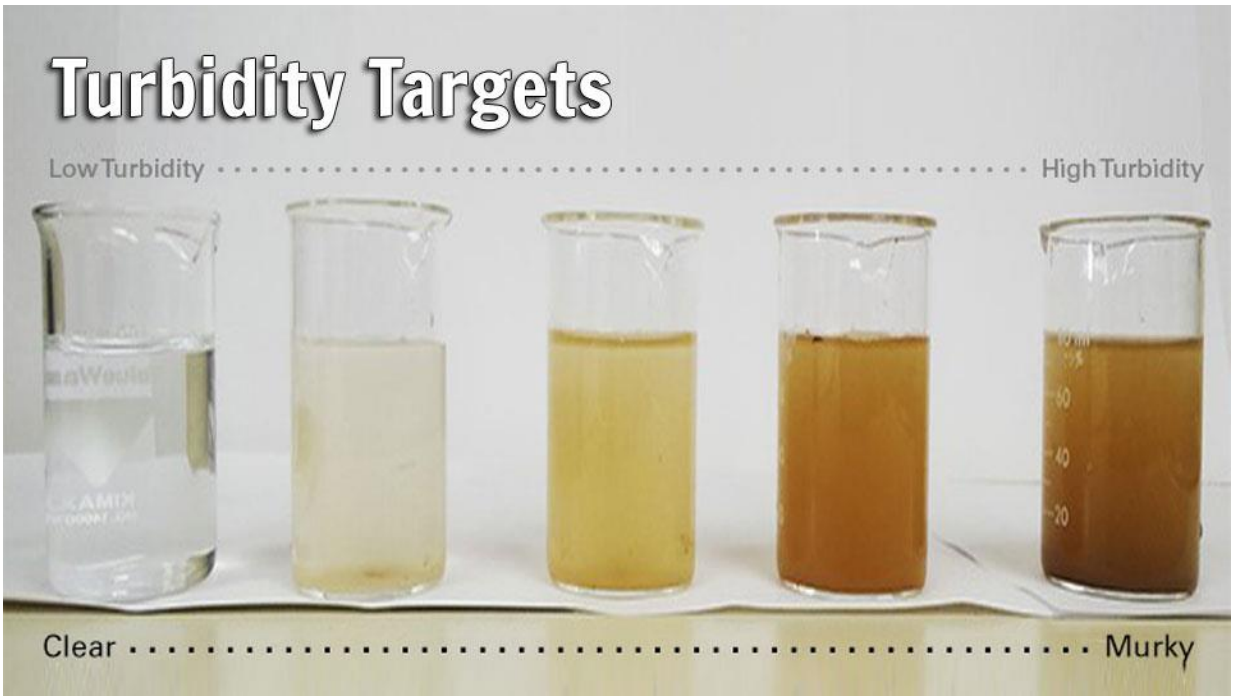
Order: Perciformes - Perch-like

Family: Percidae (perch, darters, walleye)

Key identifier: dorsal fins separate

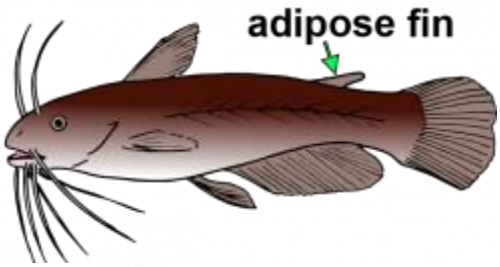


Walleye: Walleye are large stream and river fish. They are noctural, feeding in late evening and moving to deep water during the day. Walleye are highly **migratory**, meaning they move a lot throughout major rivers. Walleye do not like waters that have high turbidity or high temperatures. **Turbidity** is a measure of which the water loses its transparency due to particles and sediments in the water. The picture below shows variations of turbidity in the water. The far right shows signs up silt and other sediments in the water.



Order: Siluriformes - Catfish

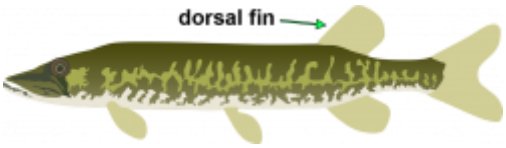
Key identifier: body without scales or covered in bony plates, barbels, and adipose fin present.



Channel Catfish: Body is completely devoid of scales and has eight barbels or whiskers about the mouth.

Order: Esociformes - Pikes, Muskellunge & Mudminnows

Key identifier: dorsal fin is positioned further back in the posterior

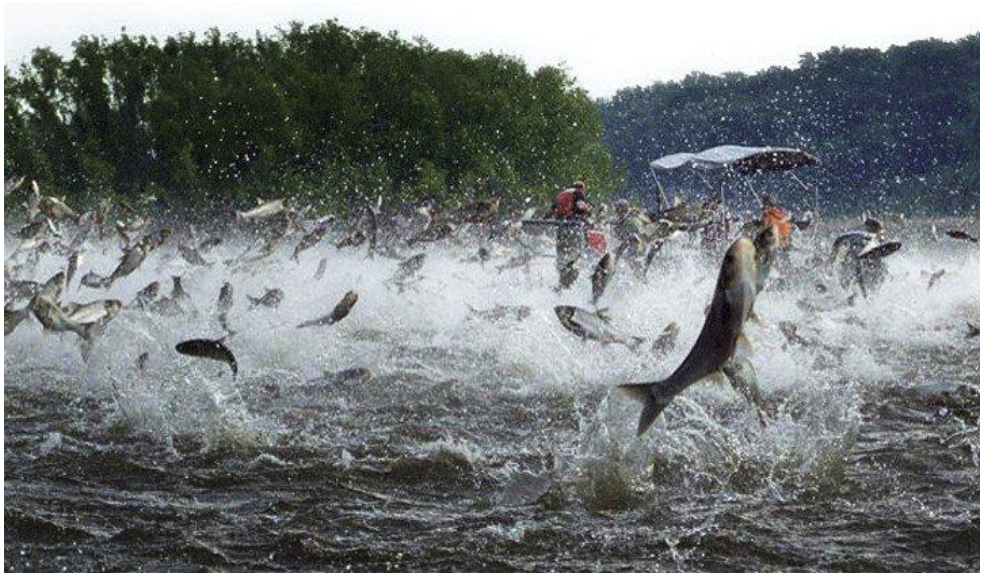


Muskellunge or Muskie: Muskie are lone, sedentary fish that lurk among vegetation, near channels, sand bars, or ledges waiting to ambush their prey (other fish). Muskie are **piscivore**, meaning they mainly only feed on fish.

Order: Cypriniformes - Carps & Minnows

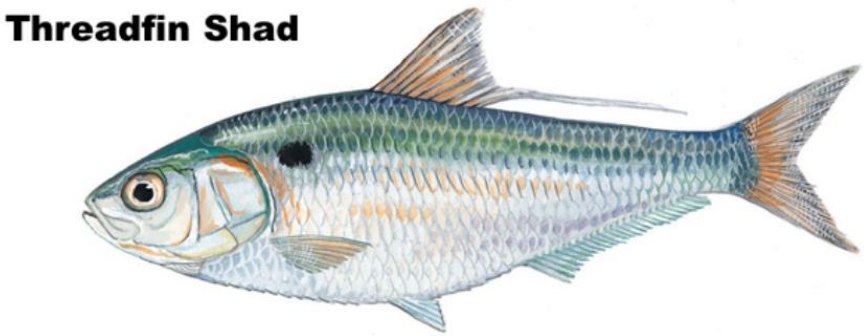
Key identifier: head is usually scaleless

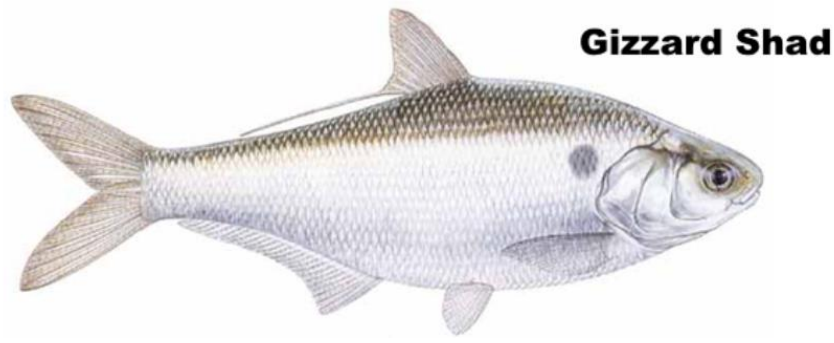
Grass Carp: Pictured above, only the grass carp is a localized species. Grass carp have two barbels located near the corners of their mouth. They prefer shallow water where they can feed on plant material. Carp are used by pond owners to take care of aquatic plant material like algae that can be a nuisance in a pond. Bighead Carp, Silver Carp, and Black Carp are considered Invasive species. Or animals that are non-native and were introduced to an area and compete with native species for resources such as food. The silver carp has the habit of jumping out of the water when boat motors are near. People in the boat can be injured, and the boat itself can be damaged by these large "flying fish." (see next page)



Order: Clupeiformes – Herrings and Shads

Key identifier: Deeply forked tail fin and elongated ray in the dorsal fin.





Threadfin Shad: Threadfin shads are a delicate silvery fish similar to a gizzard shad. Shads feed in large schools. The species is sensitive to rapid temperature changes and are subject to large-scale die offs.

Gizzard Shad: One of the most common and widley distributed fish in Illinois. They travel in large, cosntantly moving schools, feeding on microscopic animals, plants, and insects. Young gizzard shad are the principle food source, or **prey,** for many large predator fish.

Lepisosteiformes – Gars

Gars: Unique because of their elgonated body and jaws. Their dorsal fin is set far back on their topside. Their mouth is filled with needle like teeth. They are covered in garnoid scales, diamond shape scales, that do not overlap. Gars are often found in sluggish waters of rivers and lakes. Gars have a gas bladderconnected to their throat to help them brathe in oxygen poo waters. There are four species of gar found in Illinos.

Longnose Gar

Below are the other 11 orders of fish in Illinois. YOU DO NOT NEED TO KNOW THESE SPECIFIC ORDERS AND COMMON NAMES FOR THE TEST. They are provided for your general interest only and to make you aware there are SEVERAL more types of fish you can learn about.

Petromyzontiformes – Lampreys
Acipenseriformes – Sturgeons and Paddlefish
Amiiformes – Bowfins
Osteoglossiformes – Mooneyes
Anguilliformes – Freshwater Eels
Percopsiformes – Trout and Pirate Perch
Gadiformes - Burbot
Atheriniformes - Silversides
Cyprinodontiformes - Topminnows
Gasterosteiformes - Sticklebacks
Scorpaeniformes – Sculpins
Salmoniformes - Salmon and Trout