

## Yellow Perch (*Perca flavescens*)

The yellow perch is commonly called many other names such as: perch, lake perch, river perch, striped perch, ringed perch, American perch, and common perch. I have personally caught many of these fish when I was a child growing up in Rhinelander, WI. There are many lakes in this area, and most are abundant with game fish such as bluegill, perch, and bass. Perch constantly nibble at most any bait, and they usually travel in schools, which makes it is pretty easy to catch many of them in one fishing trip.

The yellow perch belongs to the largest group of fish which is the spiny-rayed fishes, order Perciformes. This group includes over 9,200 species, but less than 20 percent of these species live in freshwater. The Percidae family also includes walleye, sauger, and darters, and was first described as a species in 1814 by Samuel L. Mitchill in “A Report, in part, of Samuel L. Mitchill, M.D., on the Fishes of New York”. It was placed in the order Perciformes, sub-order Percoidei, Family Percidae, Genus *Perca*, and Species *Perca flavescens*.



The identification of the yellow perch starts with the color. It has a golden-yellow coloration on the sides, which is where the common name stems from as well as the scientific name. *Flavescens* translates to “yellow”. This color can vary in the species depending on the age of the fish and the water clarity where it resides. The young fish and fish that live in clear lakes have less yellow coloring, and the adult fish have more yellow coloring. The common name of striped or ringed perch comes from the six to eight dark bars running vertically down its sides. It has a greenish-brown back, yellow to green caudal fin, a white belly, and the pectoral and pelvic fins can have a yellow or red coloring to them - usually seen on the males during breeding season.

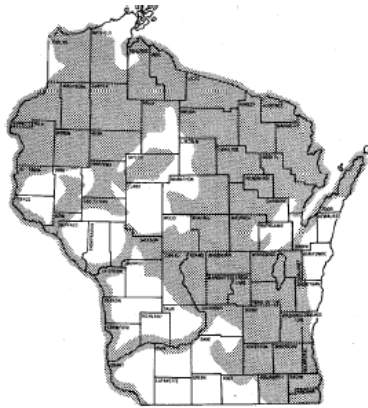
Another identifying feature of the yellow perch is its fins, specifically the dorsal fin. Similar to the walleye (which is in the same family – Percidae), the yellow perch has two fins. The front dorsal fin is stiff and sharp and has 12 to 14 spines, and the back dorsal fin is softer and more flexible and has 12 to 13 rays. The anal fin has 2 spines and 7 to 8 soft rays. The caudal fin has a gentle fork in the middle and the tips are rounded.

The lateral line is also prominent on a yellow perch. It has 51-61 scales along it. The scales are ctenoid scales, and make the yellow perch feel rough to the touch.

Though the walleye is in the same family as the yellow perch, the teeth are very different between these two species. The walleye has cone-shaped pointed teeth, but the yellow perch has small backward slanting teeth lining the jaw and gill rakers.

Yellow perch are long and slender, and average 7 to 10 inches long. There is sexual dimorphism in yellow perch. The females grow faster and reach a larger overall size than males. The size of the perch is dependant on its surroundings. In a densely populated lake, the yellow perch can average only 4 to 6 inches long. In the Great Lakes, the average length is 8 to 12 inches, and weighs about one pound. The Wisconsin state record fish was caught on Lake Winnebago in 1954, and weighed 3 lbs. 4 oz.

Yellow perch are distributed in the temperate and subarctic zones of the Northern Hemisphere. The original range is from Nova Scotia south to South Carolina, West to Kansas, and northwest into Canada. The yellow perch was later introduced to Washington, California, and Oregon, but it is not native to that region.



In Wisconsin, the yellow perch can be found in lakes and ponds created from glaciers that covered the area. This area covers the majority of the state with the exception of the south west portion. It is also commonly found in major rivers, and even more densely populated in rivers that have been dammed.

This species is tolerant to a variety of conditions, but some conditions will affect the population density and growth rate. In areas where there is abundant aquatic vegetation, it makes it difficult to predators to prey on yellow perch. This can result in over-population and stunt growth. In areas where there is a lack of cover for a good spawning habitat, it will reduce the population.

The yellow perch live in moderate temperature. The younger perch usually stay in the shallow water, but will move to the cooler, deeper water as the temperature increases. They follow a seasonal migratory pattern of coming in towards shore in the spring to spawn, then towards deeper water as temperatures rise in the summer, then out into very deep water in winter.

A unique characteristic of the yellow perch is that it has the ability to survive low oxygen levels, which allows it to survive in winter when there is a lack of oxygen under the frozen lakes. Other species such as bluegill, bass and walleye do not have this ability, and have more winterkill.

Yellow perch are active during the day, and form spindle-shaped schools from 50 to 200 fish of the same size and age. The schools of smaller fish generally stay in more shallow water than the schools of larger fish. The schools feed during the day, especially early morning and late afternoon. When it becomes dark, the schools travel towards shore. When it becomes too dark to see each other the schools break up, and the fish all move to the bottom and stay motionless. When the sun rises, the schools form before they move back out to the deeper water.

The yellow perch plays a very important role in the food chain. The small perch swim along the bottom and eat small aquatic insects or use their gill rakers to strain zooplankton from the water. As the yellow perch grow larger, their diet evolves. The larger perch prefer minnows and other small fish. The shape and structure of the yellow perch makes it more versatile in its feeding habits than other species in the Percidae family. The mouth is subterminal which makes it easy for them to feed at the bottom, the teeth are sharp and backwardly directed to hold struggling prey, the gill rakers can easily strain microscopic organisms in the water, and the swim bladder can adjust easily so that food can be found at many different depths.

Because the yellow perch is a relatively poor swimmer, it often becomes prey to predator fish such as the walleye, bass, pickerel, northern pike and muskellunge. Besides fish predators, there are other types of predators. Herring gulls, herons, and other birds also feed on yellow perch. The perch larvae also are eaten by water snakes, garter snakes, and bullfrogs.

The lifespan of the yellow perch is about seven years. Males reach maturity between two to three years old, and females reach maturity between three to four years old. The spawning begins in early spring, and lasts from April to early May in temperatures between 44 and 52 degrees Fahrenheit.



The spawning areas preferred by the yellow perch are locations with vegetation or submerged brush, but they will also spawn on gravel or sand bottoms. Once the female releases her eggs, the males release milt that appears as a white cloud to fertilize the eggs. The eggs are held together in a long transparent gelatinous strand that can reach up to seven feet long and contain up to 210,000 eggs! The average strand is much shorter and contains 28,000 eggs. The egg strand is then abandoned after spawning.

The eggs usually hatch between eight to ten days after they are fertilized, but other conditions such as temperature could cause it to take up to a month to hatch. The newly hatched fish are called fry, and are less than  $\frac{1}{4}$  inch long. The fry have large mouths, well-developed jaws, teeth and eyes. They survive from the food stored in the yolk sacks for 3-5 days, and then begin eating zooplankton after the yolk sack has been absorbed. When the yellow perch grow to about one inch, the fins become fully developed with spines and rays. At about an  $1\frac{1}{2}$  inches, the fish become fully scaled.

The yellow perch grow very rapidly. The fry grow 50% of their first year's growth in the first three months. The growth is then mostly in length for the first two years, and then the growth primarily consists of weight after that time.

The yellow perch is economically important as a food source and recreation. It supports a commercial fishery in Lake Michigan, Lake Erie, and Lake Huron. The yellow perch is also a very popular sport fish, and is one of the easiest fish to catch. They nibble at the bait instead of inhaling the bait. It can be caught on most any line and with most any bait such as grasshoppers, angleworms, grubs, and small minnows.

The population of the yellow perch has fluctuated periodically between 1930 and 1964. The population decreased in the 1960's, but rebounded in the early 1980's. The alewife predation and competition in the yellow perch larvae are reported to be the primary reason for that decline. Other factors such as overfishing and competition with other exotics such as the rainbow smelt were also noted as possible reasons for the decline. The population again decreased in the 1990's, but the exact reason is unknown. Possible theories for this include loss of habitat, severe spring weather, and predation of larvae by alewives.

There is a quota management system for the commercial Green Bay fishery to help maintain a stable population of yellow perch. According to the fishery, commercial fishing along with spawning conditions (water temperature and wind) can contribute to population fluctuations. One method that has historically been used to analyze the population was a mark-recapture study in Lake Michigan and Green Bay.

Yellow perch have relatively short life spans and very low fat content that equals less than 1% of their body mass, so researchers have do not have a lot of concern about contaminants accumulating in the perch as they do with larger predatory fish. There have been recent studies that do show that yellow perch can accumulate mercury in their flesh, however.



There is also a newly identified parasite in Wisconsin, Minnesota and Ontario called *Heterosporis* that infects fish muscle tissue. The infection of this parasite does not cause the fish to die, but if other fish eat muscle from an infected dead fish, it releases spores into the water for other fish to acquire. There is no evidence that *Heterosporis* can infect humans, but most people choose to discard the infected fish based on the quality of the fillet.

The fillet of infected fish appears white and opaque as shown on the picture above. The parasite's spores develop in the muscle cells and cause the muscle tissue to degenerate. To date, biologists have not noted a decline in the yellow perch in lakes where *Heterosporis* is present.

VHS fish disease has recently been detected in yellow perch by the Wisconsin Department of Natural Resources. VHS stands for Viral Hemorrhagic Septicemia, and was first diagnosed in the Great Lakes in 2005, and caused large fish kills in the Great Lakes in 2005 and 2006. This disease is not a human threat, but it can kill many different game fish.

In summary, the yellow perch are sweet-tasting game fish that are easy to catch in Wisconsin in any season. They are hardier than other game fish in the winter with their unique ability to sustain low dissolved oxygen levels under the ice. They do not migrate long distances, but they do move between shallow and deep water due to temperature changes and life cycle changes. We need to be careful with the environment to ensure that we do not diminish the natural habitats of the yellow perch, even though they are versatile to many different types of habitats. I personally look forward to future fishing adventures, and hope to catch many more yellow perch.

#### **List of References**

- Creque, S. 2000. "Perca flavescens" (On-line), Animal Diversity Web. Accessed June 13, 2009 at [http://animaldiversity.ummz.umich.edu/site/accounts/information/Perca\\_flavescens.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Perca_flavescens.html).
- Dehring, T. and Krueger, C. August 2008. Wisconsin Department of Natural Resources. Bureau of Fisheries Management. Madison, Wisconsin. PUBL-FM-710 08. Accessed June 12, 2009 at [www.dnr.state.wi.us/fish/lakemich/Yellowperch.pdf](http://www.dnr.state.wi.us/fish/lakemich/Yellowperch.pdf)
- Dettmers J, Wahl D, Clapp D, Glover D. Yellow perch (*Perca flavescens*) stock structure in Lake Michigan: an analysis using mark–recapture data. *Canadian Journal of Fisheries & Aquatic Sciences*. September 2008; 65(9):1919-1930. Available from: Academic Search Elite, Ipswich, MA. Accessed June 15, 2009.
- DNR alert: VHS fish disease found in yellow perch. *Wisconsin State Journal*, The (Madison, WI). June 13, 2008. Available from: Newspaper Source, Ipswich, MA. Accessed June 14, 2009.
- Hinshaw, J.M., Species Profile: Yellow Perch, *Perca flavescens*. Accessed June 20<sup>th</sup>, 2009 at <http://www.thefishsite.com/articles/241/species-profile-yellow-perch-perca-flavescens>
- Kraemer L, Campbell P, Hare L, Auclair J. A field study examining the relative importance of food and water as sources of cadmium for juvenile yellow perch (*Perca flavescens*). *Canadian Journal of Fisheries & Aquatic Sciences*. March 2006; 63(3):549-557. Available from: Academic Search Elite, Ipswich, MA. Accessed June 15, 2009.
- Larson J. YELLOW PERCH. *Field & Stream*. May 2005; 110(1):66-66. Available from: Military & Government Collection, Ipswich, MA. Accessed June 15, 2009.
- Marcquenski, S. Heterosporis (Yellow Perch Parasite). Wisconsin Department of Natural Resources. Accessed June 16, 2009 at <http://www.greatlakesfishhealth.com/AIS%20Resource%20Materials/Heterosporis.pdf>
- Merwin J. A Mess of Perch. *Field & Stream*. March 2006; 110(10):26-26. Available from: Military & Government Collection, Ipswich, MA. Accessed June 15, 2009.
- Mitchill, S. L. 1814. Report, in part, of Samuel L. Mitchill, M.D., on the fishes of New-York. New-York. D. Carlisle. 1-28.

Myers, P., R. Espinosa, C. S. Parr, T. Jones, G. S. Hammond, and T. A. Dewey. 2008. The Animal Diversity Web (online). Accessed June 12, 2009 at <http://animaldiversity.org>.

Pearss A. S., H. Achtenberg. Habits of Yellow Perch in Wisconsin Lakes. Bulletin of the United States Bureau of Fisheries Document 885, issued August 4, 1920. 293-366

Vick N. A Perch Firefight. Field & Stream. December 2007; 112(8):50-50. Available from: Military & Government Collection, Ipswich, MA. Accessed June 15, 2009.

Wood, P. The Odds are Against These Eggs. The Capital HometownAnnapolis.com (online). Accessed June 22, 2009 at <http://www.hometownannapolis.com/news/top/2007/03/31-21/The-odds-are-against-these-eggs.html?ne=1>.