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## *Perca flavescens*

(yellow perch)

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By Sara Creque

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### Geographic Range

Yellow perch, *Perca flavescens*, are north temperate fish. They extend from west central Canada and the Hudson Bay area east to New Brunswick, down to South Carolina and west to Kansas (Clay 1975; Herman et al 1959).

**Biogeographic Regions:** nearctic (native .

### Habitat

Yellow perch are found mainly in lakes and sometimes in impoundments of larger rivers. Clear water is important as excessive turbidity and silt could lead to death of perch. Perch do however have a high tolerance for low oxygen conditions. They inhabit water of moderate temperature, avoiding cold deep water and warm surface waters during the summer. Young perch generally inhabit shallower water than larger ones, though as temperature increases all move to cooler, deeper water (Walden 1964; Herman et al 1959).

**Aquatic Biomes:** lakes and ponds.

## Physical Description

### Mass

150 g (average)  
(5.28 oz)

Adult yellow perch are usually golden yellow; young are usually more whitish. There are 6 -- 8 dark vertical bars on the sides of these fish. Their eyes are green to yellow. They have a spiny dorsal fin with 12 -- 14 spines and a second dorsal fin with 12-13 soft rays plus 2-3 spines (Craig 1987; Herman et al 1950). There is usually a blackish blotch on the membrane between the last 3 or 4 dorsal spines. Their anal fin has 2 spines and 7-8 soft rays. The lower fins of adults are usually tinged yellow or red; this is especially noticeable on males during breeding season. The lateral line is prominent and curved with 51-61 scales along it. Yellow perch have rough feel because they have ctenoid scales (Clay 1975; Herman et al 1959).

Adult yellow perch usually grow 10 to 25.5 cm in length, occasionally they can reach 35.6 cm, but these are older fish than most (Walden 1964; Clay 1975). There is sexual dimorphism in yellow perch. Females grow faster and reach a greater ultimate size than males. There is a 2.5 cm length difference in seven-year-old fish (Herman et al 1959; Craig 1987). The growth rate of perch varies greatly from one body of water to another. Yellow perch are particularly prone to stunting, a condition where fish are smaller in size than other fish populations in the same geographic region (Heath and Roff 1996; Herman et al 1959).

**Some key physical features:** bilateral symmetry 

## Reproduction

Female yellow perch mature at ages two to four, males usually mature one year earlier. Spawning takes place in the spring (April through early May) when the water temperature reaches 45 - 52°F (Craig 1987; Herman 1959). The average number of eggs laid per female is 23,000. After deposition the eggs rapidly swell and harden. Eggs hatch in 8 - 10 days and the emerging the fish are 4 - 7 mm in length.

Yellow perch larvae have large mouths, well-developed jaws, teeth and eyes. They begin active feeding at 7.0 mm but still absorb food from the yolk sac. At 21- 27 mm the fins are fully developed with spines and rays. The fish become fully scaled at 36-37 mm. After hatching, the larvae first appear nearshore and then become pelagic (move offshore) and remain so until their fins fully develop (Craig 1987; Fischer and Willis 1997; Walden 1964). Yellow perch are relatively short-lived fish, few over seven years old are ever caught (Herman et al 1959).

## Behavior

Yellow perch move from deep water where they overwinter to shallow water spawning areas in the spring. Males arrive on the spawning grounds first. Spawning occurs over sand, gravel, rubble, and vegetation in depths from 0.5 - 8 meters (Craig 1987; Herman 1959). Yellow perch lose their normal diel behavior activity patterns during spawning season. Spawning takes place during night and day. Two to five males usually accompany a single female. The female swims over the substrate. One male follows her while the others remain still. As the female swims in a spiral motion, pushing herself into a U-shape, a long gelatinous egg strand is released (Craig 1987). The egg strand may be .61 - 2.1 meters long and 5.1 to 7.6 cm wide. At least two males, including the follower, then release milt over the eggs. The egg / sperm release process takes about five seconds. Females leave immediately after egg release. Males remain after spawning, though they do not guard the eggs / fry (Herman et al 1959; Craig 1987; Walden 1964).

Yellow perch are relatively poor swimmers; they do not accelerate quickly. Yellow perch are schooling fish which may help overcome this poor swimming ability by providing protection for younger fish and easier prey capture for older fish (Craig 1987). Young of the year perch tend to school more than older fish, which occasionally travel alone (Helfman 1979; Herman et al 1959). The schools are spindle shaped and contain 50 -200 fish that seem to be arranged by size and age (Herman et al 1959). Females and males are often in separate schools (Craig 1987).

Vision is necessary for schooling, and perch in most studies are shown to break up in the evening and reform in the morning (Helfman 1979; Hergenrader and Hasler 1968). Light levels may be important determinants of yellow perch activity. They are active during the day and inactive at night (Helfman 1979; Craig 1987). Overall, yellow perch do not

travel far throughout the year.

Perch are an important food source for top predators such as the walleye, northern pike, muskellunge, and in colder waters lake trout. Herring gulls and diving ducks also eat them (Herman et al 1959). Pumpkinseeds and white suckers appear to compete for the same prey resources as yellow perch (Craig 1987; Heath and Roff 1996). Stomach contents of small walleye often contain young yellow perch. In Lake Erie it was estimated that at least 18 % of potential 18-mm yellow perch were eaten by walleyes in 1988. White bass and white perch added to this percentage (Hartman and Margraf 1993).

**Key behaviors:** natatorial ; motile .

## Food Habits

Young of the year yellow perch feed on zooplankton, then as they grow they switch to benthic macroinvertebrates and finally fish (Gerking 1994). In Lake Erie and other lakes, young of the year switch from mainly zooplankton to benthos during midsummer declines in zooplankton biomass (Post and McQueen 1994; Roseman 1996).

Yellow perch have small backward slanting teeth lining the jaws and gill rakers that strain out small pelagic food sources from the water (Herman et al 1959). Their mouth is subterminal which makes it easy for them to feed at the bottom (Parrish and Margraf 1990). Yellow perch swallow their food whole (Weatherly 1972). They switch to prey longer than 1.7 mm when they reach total lengths of 60 - 75 mm (Schneberger 1991). In large fish, the net energy gained by eating large prey, such as benthos and fish, outweighs the disadvantages of capture and digestion (Mills et al 1989).

## Economic Importance for Humans: Negative

No negative effects known.

## Economic Importance for Humans: Positive

Yellow perch are economically important in terms of a food source and recreation. Yellow perch support a commercial fishery in Lake Michigan, Lake Erie, and Lake Huron. The peak commercial catch of yellow perch in Lake Erie was 13,546 tones in 1969. The 1980 - 1984 Canadian yellow perch commercial catch represented 55% of the value of all fish landed in Lake Erie by Canada (Craig 1987; GLFC 1997; Jude and Leach ). Yellow perch are also a very popular sport fish that contributes lots of tourism and recreation dollars to the economy. About 85% of the sport fish caught in Lake Michigan are yellow perch (Francis et al 1996). Sport anglers' catch in Lake Erie in 1984 was 58 times larger than the commercial catch (Ruetter and Hartman 1988).

## Conservation Status

**IUCN Red List:** <http://www.redlist.org>: No special status.

**US Federal List:** <http://endangered.fws.gov/wildlife.html>: No special status.

**CITES:** <http://www.cites.org/eng/append/appendices.shtml>: No special status.

Historic data on yellow perch are not plentiful, but commercial catch records from the Great Lakes show the perch population had regular periodic fluctuations between 1930 and 1964. Populations decreased in the 1960's but had rebounded in the early 1980's. Alewife predation and competition with yellow perch larvae is thought to be the primary reason for the drastic decline. Other factors include overfishing, competition with other exotics such as rainbow smelt, and nutrient loading, which degraded spawning grounds (Jude and Leach ; GLFC 1997; Francis et al 1996).

Yellow perch populations fell dramatically again in Lake Erie in the 1990's. The exact cause is unknown but is probably related to loss of suitable habitat (macrophyte beds), recruitment failure, zebra mussels, and competition with white perch, an exotic (GLFC 1997). The most recent decline is also occurring in the other great lakes. The average age increase and lack of young of the year perch in Lake Michigan suggests that year class failure is occurring early in the life cycle. Severe spring weather, predation by alewives, and competition with other planktivores are possible causes of post-larval perch mortality (Francis et al 1996).

Ohio closed its gillnet fishery in 1984 to protect yellow perch populations in Lake Erie. Extensive studies on yellow perch throughout its range have helped to increase understanding of what factors most affect perch populations. Interagency efforts to reduce overfishing and protect spawning perch are also being implemented (Ruetter and Hartman 1988; Francis et al 1996; GLFC 1997).

## Contributors

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William Fink (editor), University of Michigan.

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