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Lepomis macrochirus (bluegill)

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By *Cynthia Sims Parr*

Kingdom: [Animalia](#)
 Phylum: [Chordata](#)
 Subphylum: [Vertebrata](#)
 Class: [Actinopterygii](#)
 Order: [Perciformes](#)
 Suborder: [Percoidei](#)
 Family: [Centrarchidae](#)
 Genus: [Lepomis](#)
 Species: ***Lepomis macrochirus***

Geographic Range

This species is native to lakes and streams in the St. Lawrence, Great Lakes, and Mississippi River systems.

Thus, it ranges from Quebec to northern Mexico. However, it has been introduced widely in places such as Hawaii, Africa, Asia, South America, and Europe. ([Froese, Pauly, and eds., 2002](#); [Murdy, Baker, and Musick, 1997](#))

Biogeographic Regions: nearctic (native); palearctic (introduced); oriental (introduced); ethiopian (introduced); neotropical (introduced); oceanic islands (introduced .

Habitat

Bluegill prefer to live in lakes and slow-moving, rocky streams. They can often be found in deep beds of weeds. In Hawaii they primarily inhabit reservoirs. Though they are freshwater fish, they can tolerate salinities up to 18‰ and are present in tributaries of the Chesapeake Bay. ([Froese, Pauly, and eds., 2002](#); [Murdy, Baker, and Musick, 1997](#))

These animals are found in the following types of habitat: temperate ; freshwater .

Aquatic Biomes: lakes and ponds; rivers and streams.

Wetlands: marsh .

Physical Description

Mass

2.20 kg (high)
(4.84 lbs)

Length

41 cm (high)
(16.14 in)

Like other sunfish, bluegill have very deep and highly compressed bodies. In other words, they are "tall" and "flat." They have a small mouth on a short head. The dorsal fin is continuous, with the front part spiny and the back part soft and round with a dark smudge at the base. The tail fin is slightly forked but rounded. The body is mainly olive green with yellowish underneath. Their name "bluegill" comes from the iridescent blue and purple region on the cheek and gill cover (opercle). A close look reveals six to eight olive-colored vertical bars on the sides.

Typically, adults are between 10 and 15 cm but they can grow as large as 41 cm.

Young bluegill are a paler version of the adults, usually silver with a slight purple sheen. (Froese, Pauly, and eds., 2002; Murdy, Baker, and Musick, 1997; Williams, 1996)

Some key physical features: ectothermic , heterothermic , bilateral symmetry .

Sexual dimorphism: sexes alike.

Reproduction

Breeding/spawning seasonBreeding season

Breeding occurs from May to September (Chesapeake Bay).

Number of offspring

50000 (average)

Time to hatchingGestation period

3 days (average)

7 days (average)

Time to independence

3 days (average)

Age at sexual or reproductive maturity (female)

1 to 2 years

Age at sexual or reproductive maturity (male)

1 to 2 years

Males make nests in colonies with from 20 to 50 other males in shallow water less than 1 m deep. The nests are circular shallow depressions, about 20 to 30cm in diameter, in sand or fine gravel from which the male has fanned all debris (Murdy et al., 1997).

Once his nest is made, a male waits in it and grunts to attract females. When one enters, both male and female swim in circles. Eventually they stop and touch bellies, the male in an upright posture and the female leaning at an angle. They release eggs and sperm and then start the process again by swimming in circles.

A female deposits her eggs into several nests, and a male's nest may be used by several females (Williams, 1996). (Murdy, Baker, and Musick, 1997; Williams, 1996)

Mating systems: polygynandrous (promiscuous) 

Spawning occurs when water is between 17 and 31 degrees C; in the Chesapeake Bay area it can begin when water temperatures reach 12 degrees C. Females can carry up to 50,000 eggs which take several days to hatch. After a week, young leave the nest. (Conservation Commission of Missouri, 2002; Murdy, Baker, and Musick, 1997; Williams, 1996)

Key reproductive features: iteroparous ; seasonal breeding ; gonochoric/gonochoristic/dioecious (sexes separate); sexual ; fertilization  (external ); oviparous 

Males guard nests both before and after females lay eggs. Paternal care involves fanning the eggs and chasing away predators. (Murdy, Baker, and Musick, 1997; Williams, 1996)

Parental investment: pre-fertilization (provisioning, protecting: female); pre-hatching/birth (protecting: male).

Lifespan/Longevity




Bluegill typically live 4 to 6 years but can reach 8 to 11 years old in captivity. (Froese, Pauly, and eds., 2002; Williams, 1996)

Behavior

Bluegill are most active at dawn. During the day they stay hidden under cover, and they move to shallow water to spend the night. Schools may contain 10 to 20 fish. (Williams, 1996)

Home Range

Home ranges of bluegill are less than 30 square meters. (Williams, 1996)

Key behaviors: natatorial ; crepuscular ; motile ; sedentary ; social 

Communication and Perception

Males change color during breeding season so it seems likely that visual cues are important either to other males or to females. Grunting is involved in courtship.


Communicates with: visual ; acoustic 

Perception channels: visual ; tactile ; acoustic ; chemical 

Food Habits

The very small mouth of this fish is an adaptation to eating small animals. Bluegills are carnivores, primarily eating invertebrates such as snails, worms, shrimp, aquatic insects, small crayfish, and zooplankton. They can also consume small fish such as minnows and plant material such as algae. Young bluegill eat worms and zooplankton, staying under cover while adults feed more in the open. (Froese, Pauly, and eds., 2002; Murdy, Baker, and Musick, 1997; Williams, 1996)

Primary Diet: carnivore  (eats non-insect arthropods).

Animal Foods: fish; insects; mollusks; aquatic or marine worms; aquatic crustaceans; zooplankton 

Plant Foods: algae.

Predation

Known predators

- [great blue heron](#)
- [kingfishers](#)
- [raccoons](#)
- [brown trout](#)
- [largemouth bass](#)
- [striped bass](#)

Bluegill travel in schools and come into shallow water only at night. During the day they try to remain hidden. ([Williams, 1996](#))

Ecosystem Roles

Bluegill are an important prey species for larger fish predators. They also impact insect populations by eating aquatic larvae.

Economic Importance for Humans: Negative

Several countries where this species has been introduced report that it causes ecological problems. Bluegill overcrowd and stunt the growth of other fish and may even be responsible for causing extinction of a native fish in Panama. It is considered a pest in its introduced range. ([Froese, Pauly, and eds., 2002](#))

Economic Importance for Humans: Positive

This is an important game fish in the United States. Bluegill are fairly easy to catch and are good to eat. They are also used to stock rivers and lakes with food for [largemouth bass](#), another important game fish. ([Conservation Commission of Missouri, 2002](#); [Williams, 1996](#))

Ways that people benefit from these animals: [food](#); [ecotourism](#).

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.

Bluegill are abundant in their native range. Many individuals are raised in aquaculture facilities and used to stock waterways. ([Conservation Commission of Missouri, 2002](#); [Williams, 1996](#))

Contributors

Cynthia Sims Parr (author), University of Michigan: April, 2002.

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