



# Green Sunfish

*Lepomis Cyanellus* (Rafinesque, 1819)

syn. *Lepomis cyanella*, *Lepidomus cyanellus*, *Apomotis cyanellus*, *Chaenobryttus cyanellus*, *Ichthelus cyanella*

ALBERTA REGULATION:  
FISHERIES ACT

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www.fairfaxcounty.gov

## Overview:

The green sunfish is a ray-finned fish of the sunfish family; native to Eastern North America - Great Lakes, Hudson Bay and Mississippi River basins and Ontario, South to the Gulf of Mexico.<sup>3</sup> Introductions of green sunfish are considered accidental, either misidentified as bluegill (*Lepomis macrochirus*) or as a contaminant in fish stockings. It has also escaped from holding ponds.<sup>1</sup> Green sunfish have established in most locations where introduced.<sup>2</sup>

Green sunfish are tolerant of a wide range of environmental conditions - turbidity, siltation, high temperatures, intermittent flow, alkalinity, and low dissolved oxygen. It tolerates crowding, becoming stunted in size.<sup>1</sup> It is a very aggressive fish, which quickly dominates new habitats in a very short time as it is highly predatory, feeding

on the eggs and young of other fish, smaller fish, and molluscs.<sup>1</sup> Adult green sunfish have larger mouths than other sunfish and can swallow a fish almost half their own body size.<sup>1</sup>

A study of the Lower Colorado River Basin found *L. cyanellus* to be one of the fastest expanding invaders and the most invasive, in terms of impacts on native fish communities. It has also been implicated in the decline of native frogs and salamanders in the U.S.<sup>1</sup>

*L. cyanellus* hybridize with the following sunfish: longear (*L. megalotis*), orange-spotted (*L. humilis*), redbreast (*L. auritus*), bluegill (*L. macrochirus*), and pumpkinseed (*L. gibbosus*).<sup>1</sup> It is similar to the bluegill, longear, and warmouth (*L. gulosus*), but can be distinguished by its large mouth, short rounded pectoral fins, and three spines on the anal fin.<sup>1</sup>

As of January 1, 2016, the possession, sale, or transport of this species in Alberta is illegal under the Fisheries Act.

## Habitat:

*L. cyanellus* prefer quiet, slow-moving pools and backwaters of low velocity streams, lakes and ponds.<sup>3</sup> Current velocities below 10 cm/sec are preferred and up to 25 cm/sec is tolerated. Tolerates high turbidity. Optimal pH is 6.5 to 8.5.<sup>1</sup> Optimal dissolved oxygen is at least 5 mg/l and levels of 1.5 mg/l or less are lethal. Salinities, greater than 5.6 ppt, are not tolerated. Laboratory trials have found green sunfish will tolerate water temperatures near 1°C, if acclimated.<sup>1</sup>

## Identification:

The green sunfish has a laterally compressed body and a large mouth



# Green Sunfish *(continued)*

which extends beyond the edge of the eye. The back is brown to olive coloured with scattered black and teal flecks, the sides are similar coloured but lighter, and females bear 7-12 dark vertical bars.<sup>1</sup> It has two broad dorsal fins, which are joined and appear as one. The first dorsal fin has 9-11 spines and the second 10-12 soft rays. The anal fin has 3 spines and 9-10 soft rays, whereas the pelvic fin has 1 spine and 5 soft rays.<sup>1</sup> A dark spot is present on the rear of both the dorsal and anal fins. Males often have a bright yellow or orange margin on the dorsal, anal, and caudal fins.<sup>1</sup> The pectoral fins are short and rounded.

Common length is 20 cm, maximum reported length is 31 cm, and maximum published weight is 960 grams.<sup>3</sup>

## Ecology:

*L. cyanellus* spawn when water temperatures range from 15 to 31°C and peaks at 20 to 28°C. Multiple spawnings occur every 8 or 9 days throughout the season.<sup>1</sup> Males are highly territorial and build nests in colonies of sunlit water, which are 15 to 25 cm in depth. Nests are sheltered by rocks, logs and vegetation. Males court females by rushing towards them and then back to the nest.<sup>1</sup> Females lay 2000 to 50,000 yellowish, adhesive eggs, 1.9 to 1.4 mm in diameter. Males guard and fan the eggs. Eggs hatch in 3-5 days into free swimming larvae that are 4.2 to 4.7 mm long. Larvae grow quickly and can reach an average size of 23.7 mm in 57 days.<sup>1</sup>

Larval *L. cyanellus* feed on zooplankton, fry consume aquatic insects and fish eggs, and adults will consume fish eggs, snails, frogs, molluscs, insects, crayfish, small fish, and sometimes their own larvae or plant material.<sup>1</sup>

Age at maturity varies with location, anywhere from 1 to 3 years. Males grow faster than females and tend to live longer. In Ontario, green sunfish have been reported to live 7 to 9 years.<sup>1</sup>

## Economic Impacts:

Green sunfish compete directly with native fish for food and prey on the eggs of some native fishes species. In cold lakes, the green sunfish has been observed to overpopulate and reduce trout populations.<sup>1</sup> Any declines in native sportfish populations could have impacts on recreation and tourism.

## Environmental Impacts:

Competition with and the predation of native fish by green sunfish alters population structure, relative dominance, and distribution patterns by reducing the populations of native fish as well as rare frog and salamander species.<sup>1</sup>

## Sociological Impacts:

The transformation of native aquatic communities results in the intrinsic loss of natural capital and enjoyment of natural areas.

## Prevention:

Learn how to identify green sunfish and how to prevent spread. Do not purchase or keep green sunfish. Never empty your aquarium into natural water bodies.

Do not use green sunfish for bait and never dump unused bait in water bodies.<sup>1</sup>

## Control:

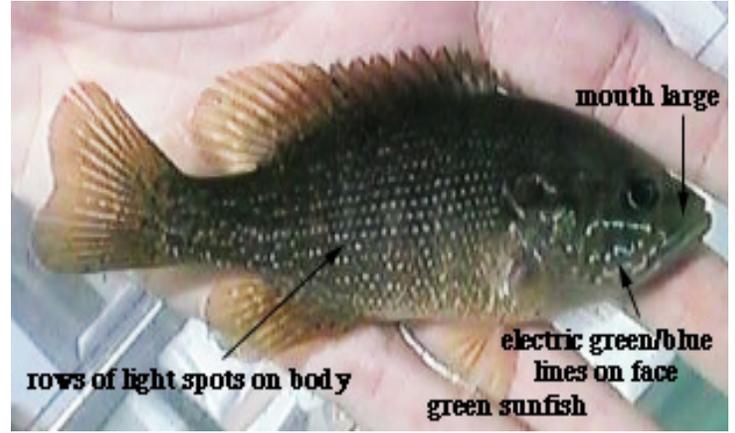
Currently there are no established control options for the green sunfish other than preventing introduction. If caught, green sunfish should be killed and not released. Report any sightings.



# Green Sunfish *(continued)*



[www.fishesoftexas.org](http://www.fishesoftexas.org)



[www.umich.edu](http://www.umich.edu)

## REFERENCES:

1. Datasheet report for *Lepomis cyanellus* (green sunfish). Invasive Species Compendium. [www.cabi.org/isc/datasheetreport?dsid=77079](http://www.cabi.org/isc/datasheetreport?dsid=77079). Accessed: March 30, 2017
2. Pam Fuller, Matt Cannister, and Matt Neilson. 2017. *Lepomis cyanellus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=380> Revision Date: 1/20/2012. Accessed: March 30, 2017.
3. *Lepomis cyanellus* (Rafinesque, 1819) Green sunfish. [www.fishbase.org/summary/3371](http://www.fishbase.org/summary/3371) Accessed: March 30, 2017.