

Fluvarium Fact Sheets

Threespine stickleback

Gasterosteus aculeatus



A fish known locally in Newfoundland as a prickly, the threespine stickleback is common throughout the province in fresh and saltwater.

Description

The threespine stickleback is named for the three spines along its back in front of the dorsal fin. The pelvic fins on its underside have also been reduced to a single spine. It has a very narrow caudal peduncle, large eyes and a small upturned mouth. A slight keel (small projections) also runs along the caudal peduncle, at right angles to the tail fin.

The colour of threespine stickleback varies with its habitat, but also changes seasonally.

- In freshwater, they are metallic green to olive or brown on the back with silver or cream coloured sides.
- In saltwater, they are metallic green to bluish black on the back and silvery on the sides.
- During spawning season, males develop a bright red belly, lower sides and through and striking blue eyes. Females develop a pink throat and belly.

Size

The average size of threespine sticklebacks varies with habitat in Newfoundland.

- Sea-run or anadromous sticklebacks grow to a maximum of 11 cm.
- Freshwater sticklebacks grow to a maximum of 8 cm.

Lifespan

These fish generally live for about 2.5-3 years and very rarely live beyond 4 years. Generally they die at the end of their first breeding season.

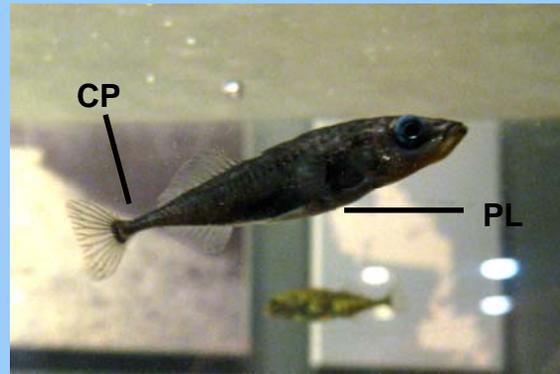
Habitat

- Freshwater sticklebacks typically live in quiet, vegetated pools, stream and lake edges. They also form schools in large lakes.
- Sea-run sticklebacks live in schools around coastal waters, close to the shore.

Range

The threespine stickleback is found throughout North America. A native fish to Newfoundland, freshwater and saltwater populations are found throughout coastal and inland areas.

Box 1: Definitions



Caudal peduncle (CP) - the area of the tail in front of the tail fin but behind all other fins.

Pelvic fins (PL) - the pair of fin located on the underside of the fish, below the pectoral fins. In sticklebacks, these fins have been modified into spines.

Sea-run or Anadromous fish - fish that live in the ocean but return to freshwater to reproduce.

Diet

This species is omnivorous (eats both plant and animal material), including phytoplankton, zoo plankton, fish eggs and fish fry. Their diet also varies with habitat.

- Freshwater populations feed on plankton, drowned terrestrial insects, organisms living on aquatic plants, and small bottom-dwelling organisms.
- Saltwater populations feed more on planktonic crustaceans and small bottom-dwelling organisms.

Reproduction and development

Threespine sticklebacks spawn from late May to July in Newfoundland. The males become very territorial just before the spawning season and their underside turns bright red.

The males choose a spawning site along vegetated areas of lake shorelines or stream edges. They build tube shaped nests from twigs, grasses and sand grains that are glued together with a protein they secrete called spriggin.

After completing the nest, the male performs a courtship dance in the form of nipping and zigzag movements to entice a female into the nest.

Females deposit about 50-200 eggs and then is chased out of the nest by the male so he can fertilize them. He may get more than one female to deposit eggs in the nest.

The males ventilate the eggs by fanning them with their tail. They also guard the eggs and newly hatched young till then can defend themselves.

The small (1-2 mm in diameter), amber coloured eggs hatch after about 10-20 days. They remain in the nest while yellow in colour and move out to form schools with other young fish when they turn silver. These schools may move out to lakes or move towards the ocean. These fish become sexually mature at around 2-3 years old.

Predation

Sticklebacks are prey to birds, larger fish, water beetles, giant water bugs and dragonfly nymphs.

When attacked, the sticklebacks raise their spines to defend themselves. The spines injure the fish's mouth and the attacking fish spits the stickleback out. Over time, fish learn to avoid eating sticklebacks.

Relation to humans

The threespine stickleback has been well researched because of their interesting courtship, nesting and predation behaviour. This species is considered a good model for

evolutionary studies as it easily adapts to new environments.

Interesting facts

- In Newfoundland, sticklebacks are called pricklys, spantickle, spannystickle, and pinfish.
- Unlike most fish, sticklebacks have no scales. Instead they have bony plates on each side of its body.
- The threespine sticklebacks make their nest directly on the bottom instead of in the vegetation as all other species of stickleback do.
- Larval sticklebacks that stray are caught by the male in his mouth and spit back into the nest.
- Threespine sticklebacks can be easily confused with other stickleback species around Newfoundland including the black spotted, fourspine and ninespine sticklebacks.

At The Suncor Energy Fluvarium

- See threespine sticklebacks up close in our series of natural water aquariums that showcase fish species found around Newfoundland and Labrador.

Additional resources

Ryan, P.M. 1984. Age, growth, and food of threespine sticklebacks (*Gasterosteus aculeatus*) in three lakes of central Newfoundland, Canada. Canadian Technical Report of Fisheries and Aquatic Sciences. No. 1325. Department of Fisheries and Oceans.

Scott, W.B. and M.G. Scott. 1988 Atlantic Fishes of Canada. Canadian Bulletin of Fisheries and Aquatic Sciences, 219: 731 p.

For more information, please contact:

The Suncor Energy Fluvarium

5 Nagle's Place,
St. John's, NL, Canada
A1B 2Z2

Telephone: (709)754-3474

Email: info@fluvarium.ca

Website: <http://www.fluvarium.ca>