

Brook Stickleback (*Culaea inconstans*)

Historical Presence	Abundance	Life History	Management
Non-Native	Rare	Freshwater	Invasive

General Information

A small scale-less fish, it has small bony plates in a line along the sides of its body, and 4-6 distinctive dorsal spines on its back. Although uncommon in NJ, this small fish is considered a potentially harmful invasive due to its potential impacts on native minnow species. Highly aggressive and territorial, it may outcompete native species for habitat (particularly spawning) and food sources.



Geographic Range

Atlantic and Arctic drainages from NS to NT; Great Lakes-Mississippi R. basins south to OH and NE, and west to MT and e. BC. Isolated populations in Canadian R. system, ne. NM.

Habitat Description

Clear, vegetated lakes, ponds, quiet to flowing pools and backwaters of headwaters, creeks and small rivers; usually found over mud or sand, and rarely in brackish water.

Optimum Habitat Requirements

Dissolved Oxygen	
Temperature	4 – 18 °C
pH	4.6 – 9.5
Turbidity	Clear
Current	< 0.90 m/s

Diet

Fry	Aquatic invertebrates
Juveniles	Aquatic Invertebrates
Adults	Aquatic Invertebrates, eggs and larvae of fishes, algae

Notes: Opportunistic feeder

Reproduction

Time of Year	April – May	Age Males Mature	1
Temperature Range	15 – 19 °C	Age Females Mature	1
Water Depth	< 0.4 m	Nest	Cylindrical(algae/vegetation)
Substrate	Organic debris and sand	Egg Type	Demersal (adhesive)
Time of Day		Parental Care	Male guards
Critical pH		Days to Hatching	8 – 11
Velocity Range	< 0.30 m/s	Oxygen Level	

Notes: Females may spawn every few days when food is abundant. Ritualistic mating process, where males build a cylindrical nest made of algae and plant material and then coerce a female into the nest via courtship displays. Males highly territorial.

Size and Growth

Adults typically 51-64 mm up to a maximum of 89 mm. Maximum longevity is 3 years of age.

References

(Barker 1918; Winn 1960; Moodie 1986; Riehl and Baensch 1991; Stewart et al. 2007)

Barker, E. E. 1918. The Brook Stickleback. *The Scientific Monthly* 6(6):526–529.

Moodie, G. E. E. 1986. The population biology of *Culaea inconstans*, the brook stickleback, in a small prairie lake. *Canadian journal of zoology* 64(8):1709–1717.

Riehl, R., and H. A. Baensch. 1991. *Aquarien Atlas*. Mergus.

Stewart, D. B., J. D. Reist, T. J. Carmichael, C. D. Sawatzky, and N. J. Mochnacz. 2007. Fish life history and habitat use in the Northwest Territories: brook stickleback (*Culaea inconstans*). *Can. Manuscr. Rep. Fish. Aquat. Sci* 2799.

Winn, H. E. 1960. Biology of the Brook Stickleback *Eucalia inconstans* (Kirtland). *The American Midland Naturalist* 63(2):424–438.