

During the ice age, there were two types (variations) of stickleback fish. One type lived only in the oceans (saltwater) and another type lived in the ocean but spawned (reproduced) in freshwater.



The ice-age glaciers retreated. The melting ice created new rivers and streams that flowed into the ocean.



The ice-age glaciers retreated and the land rose. Streams were cut off from the sea leaving some freshwater lakes isolated from the ocean.



Some stickleback populations were stranded in the freshwater lakes left behind as glaciers retreated.





Stickleback fish trapped in the newly formed freshwater lakes had to survive and reproduce in a freshwater environment.



Stickleback fish populations changed from the time they were first stranded in the freshwater environment to later generations. During that time, their bodies became smaller, and their coloring, their skeletons, and the length of their spines changed.



Saltwater sticklebacks in the ocean tend to have complete armor. This armor includes bony plates on their sides, and long sharp spines on their pelvis and back.



When swimming, the stickleback's spines (if they have them) lay flat against their body.





Large fish prey upon ocean sticklebacks. When threatened, sticklebacks respond by raising their spines.



In freshwater lakes, dragonfly larvae prey upon stickleback fish. The dragonfly larvae catch sticklebacks by grabbing their spines.



Most freshwater sticklebacks have low body armor or none at all. Their spines are much shorter or are missing entirely.



Today, there are three types of stickleback fish populations:

- marine - fish that live and breed strictly in the ocean;
- sea-run - fish, like salmon, that are born in fresh water, spend most of their lives in the ocean, and migrate back to freshwater to breed; and
- freshwater - fish that live and breed entirely in freshwater.

