

The Importance of Stickleback: Short

These fish are stickleback fish. They're essentially bait fish and they're really important in the ecosystem. They're pretty much the first crossover that you have between some basic plants and basic insects to larger animals. So when you think about a giant ecosystem and the food that we eat, like bass or trout or something like that, they're eating stickleback. So what happens in the stickleback matters to us.

Stickleback fish are native to pretty much anywhere that's subarctic. So if it's decently cold enough – around 60 or so, 50-60 or so degrees Fahrenheit – you're going to find probably sticklebacks around in your lake and sometimes even streams. In several different places around the world, glaciers have come in and created different lakes and so stickleback that were in the seas have kind of followed the glacial pattern to get into those lakes. So once the glacier's melted and made the lakes where the sticklebacks are today you've got kind of a snapshot of what the fish were like a while ago and how they've evolved in that new habitat. So, it's really cool because you can compare a lake in Switzerland with a lake in Canada with a lake in ... I don't know ... Japan and look at the differences based on the ecology because you know these fish arrived at roughly the same time.

In a lot of lakes, there are sticklebacks that are of one type. So, they have a decently deep body and sort of a long face and they all look kind of the same. What you can tell the difference of is the males and females during the breeding season because the males develop a coloration on their throat that's typically red. But in some of the lakes, two species, "pairs" have formed. So that basically means that one species and another species have split. So they have different parts of the lake that they utilize. Benthics at the lower, the bottom part of the lake. And Limnetic form, which is the upper, top part of the lake. And they have different coloration and different patterns that they use in order to attract mates that we think has kept the species apart since they first diverged.

In a real way, it's very nice that the stickleback system exists and is very visible. So, here, females develop eggs and they go around searching for a potential male to mate with. And each male, to do his part, must build a nest out of a glue* gathers materials from around in his habitat, makes his nest, and then when a female comes around, he dances for her. He dances and bites at her to get her to come to his nest. And if he's successful, she'll approach him, there'll be a lead and a follow, and then he'll show her the nest, she'll examine it, and if she likes it, she'll enter and deposit her eggs. As soon as she deposits her eggs, she leaves, he swims through and fertilizes, and suddenly... it's daddy fish!

So, it's known in a lot of places that climate change is going on and that humans are having a lot of impact on their environment. This has been documented in several places. And, so, one thing that I'm curious about is how the change over time--not just on the evolutionary scale but an ecological scale, so within a season--how changes in an individual's mating habits might influence the whole species. And, so, if you think about a habitat that's, say, been fragmented. If you took some of the individuals and made a lake really dense with fish and some of the individuals and made a lake really sparse with fish, how does that change how females actually choose their mates and what does that do to the numbers of offspring that are produced? What are we doing when we're looking at aggregate numbers and changing up the demography of populations that has a worse effect, perhaps, than the actual climate change originally itself? So, I'm interested in how our environment is changing and how we are influencing the environments of different species, particularly, in this case, the stickleback to influence how they're evolving.

*Note: I incorrectly stated that the glue is secreted from 'liver' (instead of the kidneys) in the original video produced by Blue Wake Media. This video and transcript has been edited to correct for that, as have the comments posted for the original video. Sorry about that!