

If not dislodged they take up residence in the mud, with the mouth protruding through the mud and facing upstream, like a funnel. Here they feed passively; the stream must pass small organic matter into the mouth of the larva lamprey, and slowly he grows.

He will stay in the mud of the rivers for four, five, six years, depending on temperatures and food supplies. That is how long it takes him to grow into something the size of a pencil.

At around four, five or six years the animal changes; it is completely metamorphosed. At this time the mouth changes into a sucking mouth, as you noticed on the film, and develops a large group of teeth which are inside the oral disc.

When this stage is reached the young lamprey emerges from the mud and decides there is a better place to live. It moves out of the mud and is moved by the spring freshets of that year out into the lake. It is now active and able to swim of its own accord and attack fish, which it must now do in order to carry on its life process. It grows at the expense of the fish to which it becomes attached, and remains about 12 to 18 months in the lake. During this time it is living off the fat of the land, so to speak, and changes from a small animal of the size I now show you up to the animal you saw the night of the film, about 22 inches long, and so big around.

At the end of, let us say, 18 months the adult then feels the urge to reproduce and starts moving from the lakes and congregating in the estuaries, ready to move back upstream into the original spawning areas.

I think, in brief, that is the life history.

The part of the life history which is of concern, of course, is the parasitic stage while the lamprey is in the lake. As the young lamprey moves out of the rivers we find that he will attack immediately any fish that happens to be passing by. As he is carried by that fish into other areas he may leave that one and move on to another.

The reason for the selective killing of trout and whitefish could quite easily be circumstances. The fact that the life history of the trout and whitefish is such that some of them are where they should not be at the time the lamprey is first interested in attaching itself to fish. If there are no fish there the lamprey would move through the lake until it finds suitable fish to feed on.

At the present time I think we have recorded lamprey scars on almost every species of fish in the Great Lakes, at least any sizable species. They do not seem to attach themselves to the small minnow groups, but I think this is a physical feature. Certainly, they are definitely attacking all of the sucker group, all the whitefish group, including many of the herring family and the trout, bass and perch,—the whole run of larger fish in the Great Lakes.

Mr. MURPHY: Doctor, would you tell the committee what happens to a fish ready to spawn when it is attacked by the lamprey?

Dr. SPRULES: Well, if it were attacked right after the spawning act? I certainly have not seen this happen but I see no reason, from the knowledge and behaviour of the fish, why the animal would not go on to spawn.

However, if the attack has been made some time prior to spawning I think we would find that the adult host was quite weakened and would tend to spawn in marginal areas at the best. It would sort of limp into port and could quite definitely affect the efficiency of the spawning, if it had been weakened by the lamprey attack.

Mr. MURPHY: Is there any evidence, doctor, of how much meat the lamprey consumes from the time it goes into the lake until it goes up to spawn?

Dr. SPRULES: Yes, there have been experiments done by the United States wild life and game service, and there is a study of the number of pounds of fish required to change the small lamprey, when he starts to feed, into an