

Re: Hatchery Disease

REPORT 54 DISEASED BROWN AND BROOK TROUT
FROM CALEDONIA HATCHERY, NEW YORK

On March 25, 1931, we were asked by Dr. Emmeline Moore, Conservation Department, New York, to assist in solving a diseased fish condition at the Caledonia Fish Hatchery, Caledonia, New York. After an exchange of several letters and receiving the report by Dr. Walter N. Hess of Hamilton College, Clinton, New York, on this epidemic it was thought advisable to have some of the affected fish sent to us on ice from the Caledonia Hatchery. The following report is based on the examination of these specimens.

The shipment consisted of six fish ranging in length from 120 to 290 mm. These had been dead at least 18 hours when examined.

The external appearance of the single, medium-sized brook trout was normal except the eyes.

The dorsal and caudal fins on all of the brown trout were abnormal as well as other fins on some of the fish. All of these fins showed signs of alternating periods of destruction and regeneration. Some of the dorsal and pectoral fins had been reduced to less than half their normal length and were enormously thickened. Caudal fins were partially destroyed, frayed and thickened. If, as stated in Mr. L. D. Winslow's letter, some of these fish are 3 years old we should be inclined to say that no exceptional growth is shown. In some of the fish the cornea of the eye was not well defined having been made irregular apparently by scar tissue. These tissues immediately around the cornea appeared to be very much thickened in two of the fish.

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One or both eyes in all of the specimens showed a white spot, which in some was very pronounced, making this organ appear almost like the eye in a preserved specimen.

The white granular material resulted from the destruction of the lens. In some advanced cases this material was hard and crystalline-like. Whether the lens capsule was involved could not be determined in the dead specimens.

In specimens with a similar disease from another hatchery the characteristic opacity was found in the cornea of the eye and the layers of tissue forming this organ could be separated, indicating lesions in this structure. Specimens from Caledonia could not be examined for these conditions since the contact of fish with the cloth surrounding the fish and pressure of the ice had roughened the surface of the cornea.

In comparing stained cover-glass smears of affected and unaffected parts of the lens scattered bacteria of the coccus type were found in the smears of affected material, indicating that these organisms possibly cause the turbidity.

Unless there are lesions in the cornea the presence of bacteria in the lens is rather difficult to explain. We are of the opinion, however, that such lesions occur in the cornea and that this is the mode of entrance for the bacteria into the lens.

Injury to the cornea of the eye is thought to be the primary cause of the condition found in these fish. If this is the cause then scar tissue should be found in the sections of the eye made by Dr. Hess.

Only one reference has been consulted which deals with this kind of an eye condition. Roth (1922) in "Die Krankheiten der Aquarienfische und ihre Bekämpfung," describes a condition very similar to the one with which we are dealing. The disease, Cataracta traumatica, he found in goldfish, especially the telescopic varieties. In these ^{the} turbidity of the lens was associated with old cornea scars and he thought that injury of the cornea was the possible cause of the abnormality.

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At the Caledonia hatchery it seems that there are at least four possible causes of such a condition:

- (1) A bacterial infection resulting from an injury.
- (2) A bacterial infection appearing as a result of weakened vitality in the fish.
- (3) Internal metabolic conditions.
- (4) Heredity.

Mendell Grell

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