

Blue Sac Disease of Fry

I. Causative Agent and Disease

Blue sac disease of fry is considered to be a non-infectious disease caused by the accumulation of metabolic wastes and reduced dissolved oxygen resulting in excessive buildup of ammonia nitrogen. The disease was reproduced in several species of salmonid alevins by allowing metabolic wastes to accumulate or by adding ammonia to the water. However, the condition has also been reproduced experimentally in rainbow and brook trout by infection of eyed eggs with the bacteria *Aeromonas hydrophila*.

II. Host Species

This condition has been reported primarily in salmonid fishes, especially brook trout and other char that tend to be the most susceptible species.

III. Clinical Signs

The alevin/fry exhibit an abnormal accumulation of fluid, often bluish in color, at the posterior of the yolk sac often progressing to surround the entire yolk. Due to the increased fluid, fry cannot swim normally. Fry may have exophthalmia, coagulated yolk, and appear smaller and pale. Petechial hemorrhages of the head, thoracic and vitelline blood vessels can occur in severe cases with hemorrhaging into the blue sac fluid and severe anemia.

IV. Transmission

In most cases, the disease is due to suboptimal environmental conditions and is not transmissible. However, when poor environmental conditions can be ruled out, transmission of blue sac disease by *A. hydrophila* becomes a possibility.

V. Diagnosis

Diagnosis is based on the observation of typical clinical signs of the condition.

VI. Prognosis for Host

Blue sac disease is usually fatal due to incomplete organogenesis and body development.

VII. Human Health Significance

There are no human health concerns associated with this condition.



Swollen yolk sacs of cultured lake trout caused by Blue Sac Disease.