

# Coagulated Yolk Disease (White Spot Disease)

## ***I. Causative Agent and Disease***

Coagulated yolk disease is a noninfectious condition resulting from unsatisfactory environmental conditions during incubation. A wide variety of factors probably contribute towards the disease including gas supersaturation, unfavorably high water temperatures, heavy metals in the water supply (Cu, Al, Zn), soft water, low water flows, low dissolved oxygen, exposure to chemicals or contaminants, excessive handling and otherwise inadequate or stressful incubation conditions. Yolk proteins become denatured and coagulate as manifested by the appearance of white spots in incubating eggs and the yolk sacs of hatched alevins. Yolk resorption is disrupted, resulting in defective development of vital organs. This causes physiological alterations in organ functions resulting in death of eggs during incubation or afterwards in alevins and larger juveniles.

## ***II. Host Species***

All fish eggs and alevins are susceptible.

## ***III. Clinical Signs***

White spots or flecks in eggs are typically at the surface of the yolk and randomly distributed. In alevins, the coagulated yolk appears a few days after hatching and may enlarge and coalesce with time. In fry that have completely absorbed the egg sac the coagulated yolk appears as a white mass in the visceral cavity, sometimes associated with clotted blood. Pinheading, anemic gills, and white or frayed fins are sometimes observed in affected fry. Non-infectious tail and fin erosion (especially pectoral fins) can be caused by unabsorbed coagulated yolk that remains in the body cavity that interferes with the ability of

the fish to maintain the replacement of epithelium covering the extremities; the fins are the first to be affected but is self-limiting, commonly observed in young Chinook salmon shortly after transfer from incubators and troughs to rearing ponds.

## ***IV. Transmission***

This disease is not infectious and cannot be transmitted from fish to fish.

## ***V. Diagnosis***

Diagnosis is made by observing the abnormal white flecks or masses of coagulated yolk in eggs, alevins or fry.

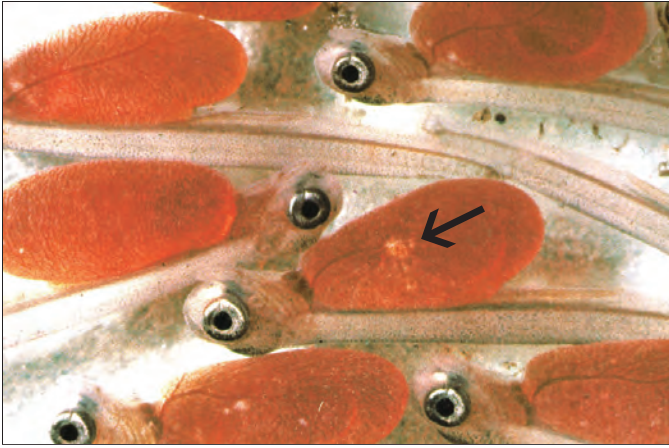
## ***VI. Prognosis for Host***

Most fish with coagulated yolk will eventually die before reaching 1 gram in size due to improper organ development. Juveniles appear normal then suddenly drop-out.

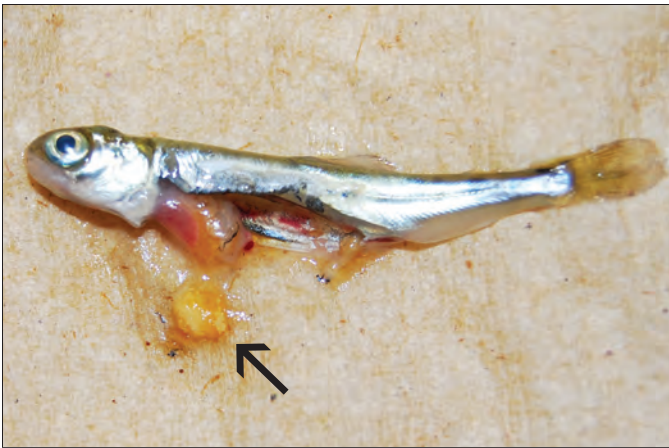
## ***VII. Human Health Significance***

There are no human health concerns associated with this condition.

NON-INFECTIOUS DISEASES



Coagulated yolk (arrow) or white spot in salmonid alevins.



Mass of white coagulated yolk (arrow) extracted from body cavity of a juvenile chum salmon.