

Philonema

I. Causative Agent and Disease

Philonema (oncorhynchi and *agubernaculum*) is a nematode (roundworm) found in the visceral cavity of fish that rarely migrates to the musculature. Larval, sub-adult and adult worms (17 mm to 86 mm) can be present. The worms generally do not cause significant pathology in the fish host but a condition known as visceral adhesion occasionally occurs in severely parasitized fish. Visceral adhesion is characterized by the production of fibrous connective tissue by the fish host in response to tissue irritation from migrating worms. In severe cases, internal organs are bound together by the scar tissue.

II. Host Species

The parasite occurs in all anadromous Pacific salmon, resident trout and char in upper North America and the Northern Pacific including Russia and Japan.

III. Clinical Signs

Usually there are no clinical signs of nematode infestation. Highly parasitized fish may have extensive visceral adhesion discovered only by necropsy.

IV. Transmission

Juvenile fish acquire the parasites in freshwater but the adult worms may develop while the fish are at sea. The life cycle includes live larvae released from gravid female worms extruded with fish eggs from adult spawning fish. The larval worms infest a freshwater copepod where they develop into third stage larvae that are infectious for juvenile salmonids. Fish are infested by eating the parasitized copepods and the larvae

migrate into the body cavity where worms molt into sub-adults and eventually adults that produce more larvae.

V. Diagnosis

Diagnosis is made by necropsy of diseased fish and the visual identification of the nematode. *Philonema* is a filiform worm having a rounded anterior end and a posterior tail tapering into a sharp point. These and other morphological features are used to identify the worm.

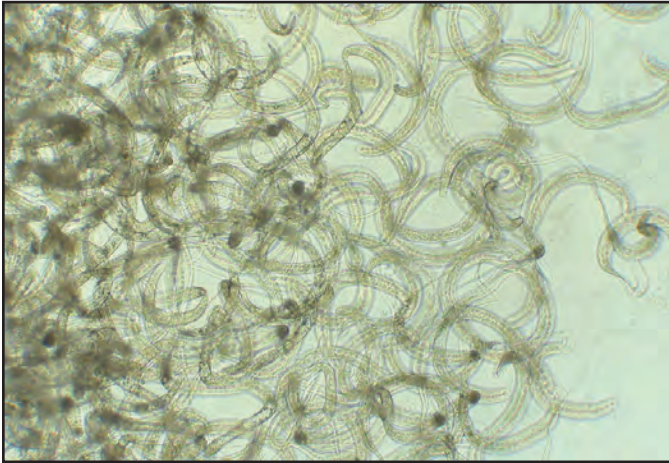
VI. Prognosis for Host

Prognosis for the host is good unless infestation is severe or other stressors further debilitate the fish. Severe parasitism can cause visceral adhesions that interfere with spawning ability and may cause serious organ dysfunction. However, the literature indicates this condition is probably transitory and does not cause significant fish mortality.

VII. Human Health Significance

Philonema is not infectious for humans.

HELMINTHS



Many juvenile *Philonema* found in the visceral cavity of an adult coho salmon, X 200.



Juvenile *Philonema* nematode with posterior tail tapering into a fine point, X 400.