

Acanthocephalans (Spiny-Headed Worms)

I. *Causative Agent and Disease*

Acanthocephalans are endoparasitic worms characterized by a retractable proboscis armed with rows of hooks used to attach to the intestines of fish. Many genera have been described as adults in the intestines of fish while some larval forms have also been identified in the viscera. Genera commonly found in Alaskan fishes are *Neoechinorhynchus*, *Acanthocephalus* and *Corynosoma*. Gut infestation by numerous acanthocephalans can cause fibrotic nodules on the surface of the intestine. The intestine may become inflamed with the destruction of intestinal villi and resulting necrotic and degenerative changes in mucosal epithelium. Intestinal absorptive efficiency may be compromised leading to decreased growth and emaciation. Acanthocephalans occasionally perforate the intestinal wall which can lead to peritonitis and death of the host.

II. *Host Species*

Acanthocephalans have been found in both marine and freshwater fishes worldwide.

III. *Clinical Signs*

Parasitized fish may be emaciated with inflamed intestinal tracts and tissue necrosis in areas where worms are attached to the intestinal wall.

IV. *Transmission*

Acanthocephalans require a vertebrate animal as a definitive host and arthropods as an intermediate host. Fish usually are the final host for aquatic acanthocephalans and microcrustaceans (amphipod, copepod, isopod or ostracod) are generally the intermediate host. Intermediate hosts are infected by eating eggs eliminated in the feces of parasitized fish.

An egg will hatch in the intermediate host releasing an acanthor that penetrates the gut and develops into an acanthella/cystocanth. The life cycle is complete when a fish eats a parasitized microcrustacean and the adult worm develops in the alimentary tract of the fish host. In some cases, fish are the second intermediate host as well as the final host.

V. *Diagnosis*

Diagnosis is made by the visual detection of adult acanthocephalans in the intestine or invasive larvae in the body cavity of a parasitized fish. The shape of the proboscis, the arrangement and the number of proboscis hooks are important characteristics used to definitively identify the species of acanthocephalan. PCR has been useful in confirming species that has resulted in changing taxonomy.

VI. *Prognosis for Host*

The principal effects on the final host can include mechanical damage to the intestinal wall and emaciation. Significant fish mortality or emaciation due to infestation by acanthocephalans are rare unless the worms are present in large numbers.

VII. *Human Health Significance*

There are no human health concerns associated with these parasites.

HELMINTHS



Acanthocephalan worm of the genus *Pomphorhynchus*.



Pomphorhynchus: a higher magnification of the spiny head (proboscis) showing numerous hooks, X 200.



Highly armed proboscis of *Echinorhynchus*.