

Parasites of Freshwater Fish In Nova Scotia

“Yellow Grub”

Are Parasites Bad?

Definitely not. They play an important role in nature, serving selection and increasing fitness of the fish population over the long term.

Parasitism has been adapted as a life style by the majority of animals - it is not uncommon for an individual smallmouth bass or trout to have a dozen or more different types of parasites, infecting as a group all organs systems, from the skin, the eyes, gills, brain, cartilage, liver, gut, gonads, and kidneys! This diversity of parasites, in many ways, reflects a very healthy trophic web and local ecosystem.

When ecosystems are stressed or foreign parasites arrive, the parasite/ host balance can tip. For example, with yellow grub the increase in runoff nutrients into a lake can cause an increase in snails, the intermediate host, leading to higher numbers of grubs in the fish.

Parasite: Organism that lives in or on another organism the host. Usually does not kill the host unless there is an advantage to transmission and completion of the life cycle. Basically they are not designed to kill.

Prevalence of Infection: Number of fish in a sample infected.

Intensity of Infection: Number of parasites in a single host individual.

Life cycle: The manner in which a parasite completes full growth and reproduction. Can be *direct* (from fish to fish) or *indirect* (via intermediate hosts like snails or insects).

Autotrophic Fish Parasites: Those that complete their life cycle within an aquatic habitat.

Heterotrophic Fish Parasites: Those that complete their life cycle in a terrestrial host like fish eating birds.

Zoonotic: A parasite that also lives amongst wildlife and can involve humans and/or our domestic animals.



“Yellow Grub”

Yellow grub gets its name from the yellow worm-like larval stage encountered in the flesh immediately beneath the skin when filleting freshwater fish.

Below is a smallmouth bass fillet with numerous yellow grubs. Two metacercariae have been removed from their cysts as frequently happens when filleting infected fish. The metacercariae measure 2-4 mm in total length and wriggle actively when removed from the cysts.

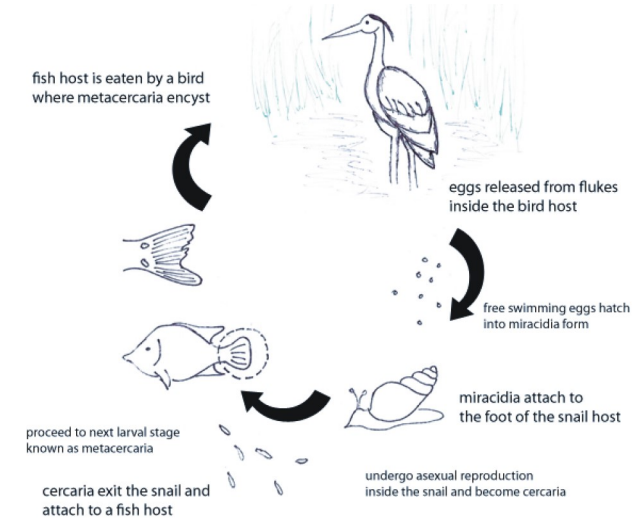


Yellow grub (*Clinostomum* - Digenea) is very common in North America. Here in Nova Scotia it is found in smallmouth bass, yellow perch, and brown bullheads and sometimes trout from Yarmouth to Cape Breton, occurring in high intensities in fish living in warm water ponds.

How do Fish get Infected?

Yellow grub has a complex, heterotrophic life cycle involving snails, fish, and fish-eating birds such as the Great Blue Heron. Adults parasites live under the tongue or in the upper respiratory tract of the heron. Parasite eggs are swallowed by the bird and passed along with the feces into the environment.

The eggs hatch and a small free-swimming larva (miracidium) infects a snail; in the snail the parasite replicates itself and releases thousands of free-swimming, short lived larvae (cercariae) that seek out a fish like bass. They penetrate the skin and as a grub (metacercaria) lodge mostly in the muscle and lower layers of the skin. When the blue heron eats the bass the grub emerges from the digested meal and migrates to the upper respiratory tract and mouth to grow, mature and produce eggs to start the cycle over again. A summary of this life cycle is copied from Wikipedia.



Interesting Facts

Heavily infected fish should not be consumed for there are rare reports of adult parasites from humans. Such fillets should be buried to avoid consumption by pets and wild fish-eating vertebrates.

Isolated grubs can be easily picked from an otherwise perfect fish and they do not survive normal cooking.

Anglers ask whether anything can be done about treating lakes or streams to get rid of the grubs. The answer is nothing and any attempt to interrupt the life cycle (i.e. poisoning snails; shooting birds) would do more ecological harm than good.