

## **FISH GRUBS IN FRESHWATER PONDS AND LAKES**

If you fish in ponds and lakes and dress the fish caught for the table, you have probably seen some fish grubs. Although fish grubs are not harmful to humans, the fish flesh may lose visual appeal and you or other consumers might not want to eat the fish. This is particularly a problem with the yellow grub. Others such as white grubs, black grubs and eye grubs usually are removed in the dressing process.

Fish grubs are the immature forms of parasitic worms that invade fishes. Grubs are contained in spherical or oval cysts and appear as round or bead-like structures embedded in the fish. If a cyst is opened, the immature worm will straighten out and flatten into a form that resembles the adult.

The yellow grub infects bass, bream, catfish and several other fishes. Its size and color make it easily visible in the muscles or edible part of the fish. Its life cycle involves a snail, a fish and a bird.

The cycle begins in the water with the hatching from a microscopic egg and release of the stage known as a miracidium. The miracidium is longer than it is wide and is propelled through the water by hair-like cilia on the body surface. After a few hours of swimming, the miracidia die unless they come in contact with appropriate snails.

Once a miracidium comes in contact with a snail, it enters the snail, sheds its cilia and forms a sporocyst. The sporocyst produces several stages known as rediae, each of which produces larvae known as cercariae. Thus, a grub parasite entering a snail as a single individual multiplies into numerous cercariae.

The cercariae leave the snail and move about in the water by the swimming action of their tails. As they come into contact with and penetrate the fish, they lose their tails and form cysts.

Yellow grubs within the cysts of the fish's flesh are known as metacercariae. The cysts typically have two walls. A thinner inner wall is thought to be secreted by the parasite and a thick outer wall is thought to be provided by the fish.

When an infected fish is consumed by a fish-eating bird, the cysts are digested by enzymes. The freed grubs migrate up the esophagus where they attach themselves. They become sexually mature adults in 4-6 hours and can sometimes be seen in the mouths of the birds. As an aquatic bird thrusts its beak into the water, eggs laid by the adult worms are released into the water. Once the eggs hatch, the cycle is completed.

Development time for the parasite in the egg is a few hours; in the snail, about 5 months; and in the bird, a few days. The grubs may live for as long as 3 years in a fish.

White grubs, black grubs and eye grubs all have different life cycles. They are similar, however, in that a snail, a fish and a bird are involved in every one of them.

Preventing grub parasites in fish requires altering the pond environment to discourage snails and

birds. Since snails eat aquatic plants, reducing submerged vegetation would help reduce the number of snails. Deep pond edges, chemical applications and plant-eating fish could help reduce vegetation. Deep pond edges also discourage wading birds.

However, chemicals that will kill the snails also kill fish. Bird control is impossible because the birds involved are migratory and killing them is illegal.

Draining and drying a pond is an effective control for grubs. The real disadvantage of this method is the time required to get the pond back into production.

Another way to reduce the snail population is to stock shellcrackers. These fish eat lots of snails and can make a real difference over a period of time.

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