

Lots of parasites, but most of the ones we are interested in belong to two groups of animals:

1) Platyhelminthes (flat worms)

2) Nematodes (round worms)

Before we get started, note that both groups (phyla) have a large number of free living (non-parasitic) members (particularly true for Nematodes).

## **I. Platyhelminthes:**

- flat worms: primitive organs, no body cavity, lots of muscles, “flat” in appearance.

Three or four main classes, of which three are parasitic:

**Liver flukes** - numerous species, of which *Clonorchis sinensis* (the Chinese liver fluke) is probably the most important.

We don't want to get too bogged down in life cycles and stuff, but we should know the basics:

eggs --> snail --> hatch --> reproduce asexually --> swim out --> bury into fish --> encapsulate in fish muscle --> eaten by human --> small intestine --> liver --> mature --> mate --> release eggs.

Can cause inflammatory reactions, and even carcinoma of the bile ducts.

- worms can consume bile, thus interfere in a serious way with digestion.

- diarrhea, vomiting, abdominal pains can all be symptoms.

- serious health problem in many parts of the world

- Don't eat raw fish !!! (at least in southeast Asia).

**Schistosomiasis** (sometimes Bilharzia):

One of the more serious parasite diseases in the world. An estimated 207 million people are infected; 120 million symptomatic.

Similar to above, but life cycle avoids fish. Instead of burrowing into a fish, the worms that emerge from a snail burrow directly into a human.

- Don't go wading through stagnant waters in areas with schistosomiasis.

Once inside the body, migrate to the blood vessels between the small intestine and the liver.

- hundreds and thousands of eggs may be produced.

- many cross into the intestine to be released

- others become trapped in the mesentery causing a massive inflammatory response.

Cause abdominal pain, diarrhea, cough, fever, fatigue, enlargement of liver and spleen. Other parts of the body can become involved on occasion (e.g. nervous system).

- also associated with increased rates of cancer.

In Egypt, incidence of schistosomiasis went from 5% to 75% (one figure). Another figure quotes 1% of children in the area of the lake formed by the Aswan dam infected before construction. Near 100% after construction.

- this is progress???
- what are the benefits from the dam?

## Tapeworms

Yes, not just a problem for your dog.

- the CDC noticed a marked increase in tapeworms in humans after Sushi became popular in this country.

The problem with tapeworms is that there are many, many different kinds of tapeworms. Some have intermediate hosts, some don't.

We won't do life cycles here. But, the mature tapeworm lives in the human digestive system. Get them from eating undercooked meats (e.g. pork -cysts are in the muscles of the pig)

- absorbs food that is meant for us
- note that they don't have a digestive system!
- often asymptomatic (though malnourishment can always be a problem) but can cause nausea, abdominal pain, or severe abdominal discomfort.
- in rare cases (if eggs are ingested), these may migrate and encyst in other parts of the body and cause serious problems (particularly if they wind up in the nervous system).

Some years ago were part of a scam - give details.