

Flukes (Gyrodactylus)

Gyrodactylus is a broad group of parasites commonly called "Flukes". These are in fact skin or gill flukes, which attach themselves to the skin or gills of the fish, and can cause a great deal of damage.

This very broad group of parasites is widely distributed and attacks many species of tropical fish kept in aquaria. For some reason Labyrinth fish do not appear to be often affected, and some authors claim that darker colored fish, are attacked less frequently, although this is not the writers experience.

As with almost all the common infestations, less than ideal environmental conditions such as poor water quality, overcrowding, stress by incompatible species etc, will create the conditions that may lead to an explosive & damaging outbreaks. The odd parasite is often present, & appears under good conditions, to remain dormant. Once however stress is caused by any factor an outbreak becomes almost inevitable & remedial action is imperative.

These worms, as in fact they are, obtain nourishment by "eating" skin fragments as well as the sucking the blood of the victim which contributes to the pale appearance in chronic infestations.

The Hobbyist should suspect the presence of these parasites if he/she observes the natural colors of the fish appeared to have faded, this is often concurrent with a clamping of the fins, or a folded appearance . Although in Gyrodactylus the infestation is more typically found on the skin, it often will manifest itself by attacking the gills. The parasite is about .75 mm long and has at its anterior portion a sucker which has two central large hooks, surrounded by some sixteen smaller hooks for attaching itself to its host.

Gyrodactylus belongs to Phylum *Platyhelminthes* which are unsegmented flat worms, & the Class or sub-division they belong to is Trematoda. This Class is again divided into 2 divisions viz. Monogenea & Digenea. Gyrodactylus belongs to the Monogenea, as it has only the need for one host, unlike the Digenea, which must have an intermediate host to complete the life cycle.

There are several varieties of Gyrodactylus , possibly the most common is *G.elegans*, others are *G. medius*, *G. gracilis*, but there are many more. All however have a similar life cycle, & cause for the most

part identical symptoms. It is not therefore necessary for the Aquarist to concern himself with the species identification.

It is worthy of note however that there are salt water forms of this parasite viz. *G.salaris* as well as others, & these can & do cause major problems from time to time in Salmon & other culture.

The sizes of the different forms vary just a little, from a low of about .3 mm, to a high of around .8mm. In some cases in early infestation they can be observed with the naked eye on the skin of the fish, but as the outbreak "deepens" the fish puts out massive amounts of slime, in a vain attempt to neutralize the parasite, and this covers the organisms so that it is hard to see them individually.

A smear with something like a Q -Tip rubbed gently over the body of the fish, (holding same carefully but gently in a wet net), then applying the smear to a clean microscope slide, should enable the user, even with a good magnifying glass, in the event that a microscope is not available, to make a certain diagnosis.

Typical signs of infection. *Gyrodactylus* & related species.

Water

Less than optimum water quality, such as a lowering of the pH level, or high Nitrate or Phosphate readings can lead to an outbreak, stress caused by incompatible fish can also cause an outbreak.

Behavior

Fish will appear lethargic, and swimming will become intermittent as the fish will tire very easily. Breathing at the surface, or just stationary "hanging" at the surface will be observed, as the fish try's to obtain sufficient oxygen when the gills are badly infested.

Fins.

Fins can become clamped and/or ragged . Often small spots of blood may be observed at the base of the fins.

Body

Lesions may become apparent on the body as well as excessive mucous. Colors of the fish become "faded" in appearance.

Gills

Gills will usually become protuberant and usually are paler than normal. Excess slime can easily be observed.

Skin

Areas of hemorrhaging can be observed as well as ulcers, which typically have a circular shape. A slime can be observed over the body in advanced cases.

Histo-Pathology

A scraping of the skin or gills will invariably show signs of the flukes, which will confirm the suspected infection. Be aware that secondary bacterial infection is very usual due to the protective epithelial layers of the skin etc, being adversely impacted.

Life cycle

The species multiply by sexual viviparous multiplication, but there is evidence that a form of parthenogenetic reproduction can take place inside the mature parasite, and even within the "daughter" cell. The term given to this rather unusual reproduction method is called "paedogenesis". Although the parasite only gives "birth" to a single worm at a time, the gestation rate is so high that in a single month, under ideal conditions for the parasite as many as one million young can be produced. In this lies the danger that an outbreak presents, as far less than this number will cause massive mortality in the average Aquarium.

The newly born parasites can creep about on the skin of the host fish, or may search out a new host thus spreading the infestation. They must find a new host rather quickly or they will die, and this gives the Aquarist good opportunities to attack the problem, which if done quickly and correctly can have an excellent outcome.

Prognosis

In most cases a cure is almost always possible and the Aquarist should be aware of what to look for. Assuming that the problem is identified as a Gyrodactylus species that is causing the problem take remedial action as detailed below. If this is done, then losses can be and should be minimal. However if the problem is not discovered, until it has severely progressed, then heavy losses will almost certainly ensue, as if the gills of the fish are badly damaged, or heavy necrosis of the skin takes place, the damage is often irreparable . It should be noted, that as in all parasitic infestations that cause necrotic damage, that

secondary infection by bacteria and/or fungus may well occur. One author has suggested that the parasites themselves may carry the infectious bacterium from fish to fish.

Treatment.

There are several treatments that can be successfully employed.

1) The use of [Formalin-MS](#). Use 20 drops of Formalin-MS per gallon of water (or 1 teaspoon per 9 gallons), preferably in a separate quarantine tank, for a maximum of 50 minutes. If fish show signs of distress stop the treatment. Alternatively Formalin-MS can be used as an extended treatment in the aquarium itself at a dosage of 2 drops of Formalin-MS per gallon of water (or 1 teaspoon per 90 gallons). Perform a 25% water change after 3 days and replace carbon filtration.

2) [Acriflavine-MS](#) is also very effective & is used at 1 teaspoon per 10 gallons of water. (For aquariums containing invertebrates we have a variant of this treatment with 3 active ingredients called [Aqua Pro-Cure](#)).

To summarize then, Gyrodactylus in its various manifestations, is quite a common parasite, which if the fish are in good conditions, with clean water and unstressed, should remain at a level which will cause no problems. If for any reason these conditions should change for the worse, then an outbreak will often occur, which if spotted early can be brought easily & quickly under control.

Gyrodactylus is an excellent example, of how prophylactic treatment in a quarantine tank, can be used to preempt the likelihood of any such outbreak.

Refs.

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