



Tikrit University  
College of Veterinary Medicine

# Parasitic diseases

Subject name: Fish diseases

Subject year: 5<sup>th</sup> stage

Lecturer name: Prof. Abduljabbar M. Hussein &  
Assist. Prof. Qusai Saleh Jummaa

Academic Email: [abduljabbar1981@tu.edu.iq](mailto:abduljabbar1981@tu.edu.iq)

[Qusaisaleh@tu.edu.iq](mailto:Qusaisaleh@tu.edu.iq)



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## Parasitic diseases

These diseases classified depending the pathogen to internal parasites (**Protozoan, and Helminthes** ) and external parasites (**Crustacean diseases**)

### 1- Protozoan Parasites

Unicellular parasites causing sever diseases in fish with high mortality rate , due to some stress factors like overcrowding & bad environmental conditions.

#### 1- Ichthyophthiriosis (White Spot, ICH)

One of the most common and serious diseases of fresh water fish of all type infected the skin , gills and fins.

#### Pathogen

*Ichthyophthirius multifiliis* is a large, single-celled ciliated protozoan

#### Life cycle:

The life cycle consist from three stages:-

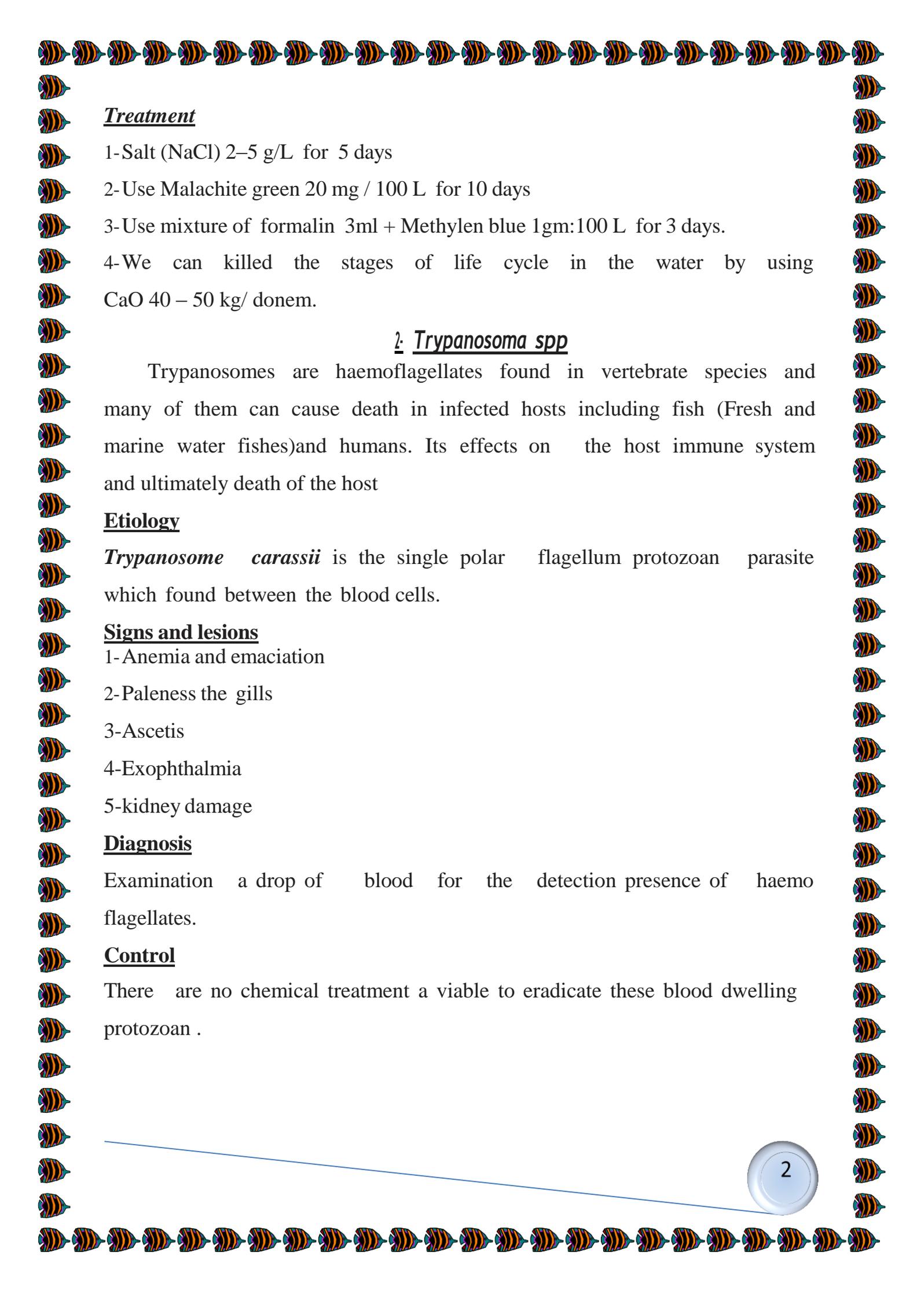
- Trophont – Appear when the parasites infected the fish will caused small white spots on the body.
- Tomont – In this stage the parasite is shed by infected fish into the water and surrounds itself with cysts.
- Theront - The stage begins when the parasite is released from the cysts.

#### Signs

- 1- White nodules on skin with Opaque to white eyes
- 2- Loss of appetite
- 3- Ragged fins, skin raised and broken
- 4- Mild skin hemorrhaging; striated skin markings or mottling.

#### Diagnosis

- 1- Clinical signs.
- 2- Take the direct smear from the skin & examine directly by microscope to showed the parasite.



## Treatment

- 1-Salt (NaCl) 2–5 g/L for 5 days
- 2-Use Malachite green 20 mg / 100 L for 10 days
- 3-Use mixture of formalin 3ml + Methylene blue 1gm:100 L for 3 days.
- 4-We can kill the stages of life cycle in the water by using CaO 40 – 50 kg/ tonne.

## Trypanosoma spp

Trypanosomes are haemoflagellates found in vertebrate species and many of them can cause death in infected hosts including fish (Fresh and marine water fishes) and humans. Its effects on the host immune system and ultimately death of the host

## Etiology

*Trypanosome carassii* is the single polar flagellum protozoan parasite which is found between the blood cells.

## Signs and lesions

- 1-Anemia and emaciation
- 2-Pale gills
- 3-Ascetis
- 4-Exophthalmia
- 5-kidney damage

## Diagnosis

Examination a drop of blood for the detection presence of haemoflagellates.

## Control

There are no chemical treatments available to eradicate these blood dwelling protozoans.

### 3. Chilodonelliasis

Chilodonella is a ciliated protozoan that causes infected fish to secrete excessive mucus.

#### Pathogen

*Chilodonella cyprini* oval shape parasite covered with cilia ,the cell contain granulated cytoplasm one large nucleus and a small another one with rows of cilia, direct reproduction by simple division on the skin & gills.

#### Signs & pathological changes:

- 1-Present the necrotic tissue in the affected gills & skin
- 2-The skin may become tattered looking , mottled or grey Appearance.
- 3- Lethargy, swimming slowly, head-up position, often near surface and edges
- 6- Ragged fins

#### Diagnosis:

- 1-Signs & pathological changes
- 2-Laboratory examination

#### Treatment & control

- 1-NaCl bath 2.5% for 10 minutes
- 2-Malachite green 20 mg / 100L for 24 hours.
- 3-Avoid overcrowding , good water contents O<sub>2</sub> & ph.

### 4. Trichodinasis

Ciliated external protozoa found on the skin, gills the disease affect all kinds of fresh – water fish .

#### Pathogen

*Trichodina alburni* is reported in Iraq by (Shemis –Al-Deen,1971 and Khalifa , 1978). The protozoa is circular in shape surrounded by the cilia , with acentral ring surrounded by hooks 20-32 as a disc for attachment with a large & a small nucleus the diameter is 26-70 microns.

## Signs & lesions

- 1-Dark- blue mucous membrane on the skin & gill
- 2-Dead and necrotic skin & gill tissue .
- 3-Itching the body with the stones inside the ponds.

## Diagnosis

Taken the smears from skin and gills for detected the parasite.

## Treatment

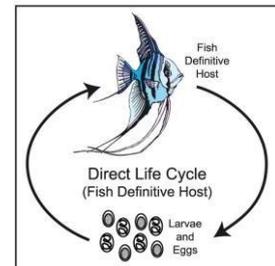
- 1-NaCl bath 10-15 gm. / L for 10 minutes
- 2-Malachite green 1gm / 400 L for minutes
- 3-Potassium permanganate 1gm / 500 L. for 30 minutes.

### 5: Nematode (Roundworm) Infections in Fish

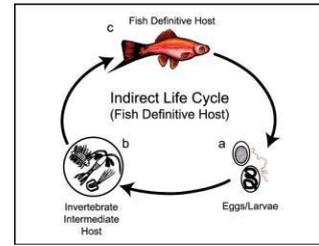
Nematodes are smooth, cylindrical, relatively long worms which distinguishes them from the flatter, segmented tapeworms and from the stouter and shorter monogenes (flukes).

## Life Cycles

-The direct life cycle, it does not need an intermediate host and infection can spread directly from one fish to another by ingestion of eggs or larvae.



- The indirect life cycle, the eggs or larvae are excreted into the water and ,during development, immature stages pass through at least two different types of organisms, one of which may be a fish.



**Signs & lesions**

- 1- Found the adult nematodes are typically in fish intestinal tracts, muscle, liver, and tissues surrounding the internal organs.
- 2- Present the inflammation, hemorrhage , necrosis and granulomas in the skin with muscle.
- 3- Abdominal distension.
- 4- Reduced growth
- 5- Reduced reproductive capacity.

**Diagnosis**

- 1- Present lumps or grub-like growths are see in the skin or muscle.
- 2- Signs & lesions
- 3- Microscopic examination for visible of nematode eggs ,larvae, or adults .

**Treatment**

Mixed 2 grams of levamisole with 1kg of food fed once a week for three weeks, with a repeat treatment in two to three weeks .

**Prevention**

- 1- Cleaning and sterilizing ponds is an effective way of reducing the numbers of the intermediate hosts of some nematode species.
- 2- Biosecurity can also help the producer avoid illness and production declines .

## 6- Cestodes(Tapeworms)

Cestodes or tapeworms are infestation a wide variety of animals, including fish usually the alimentary tract, muscle and other internal organs. Larval cestodes are some of the most damaging parasites to freshwater fish .

### Signs:-

- 1-Tapeworms-infected grass carp suffered from high mortalities .
- 2-Inflammation of the intestine and severe “catarrhal-haemorrhagic enteritis” .
- 3-The intestines of infected small fish, become plugged by the worms and in some instances are perforated.

### How’s it diagnosed?

blood test to identify the presence of a parasite. However, this type of infection is most often diagnosed by examining a person’s stool for parasites, worm segments, and eggs.

### Treatment

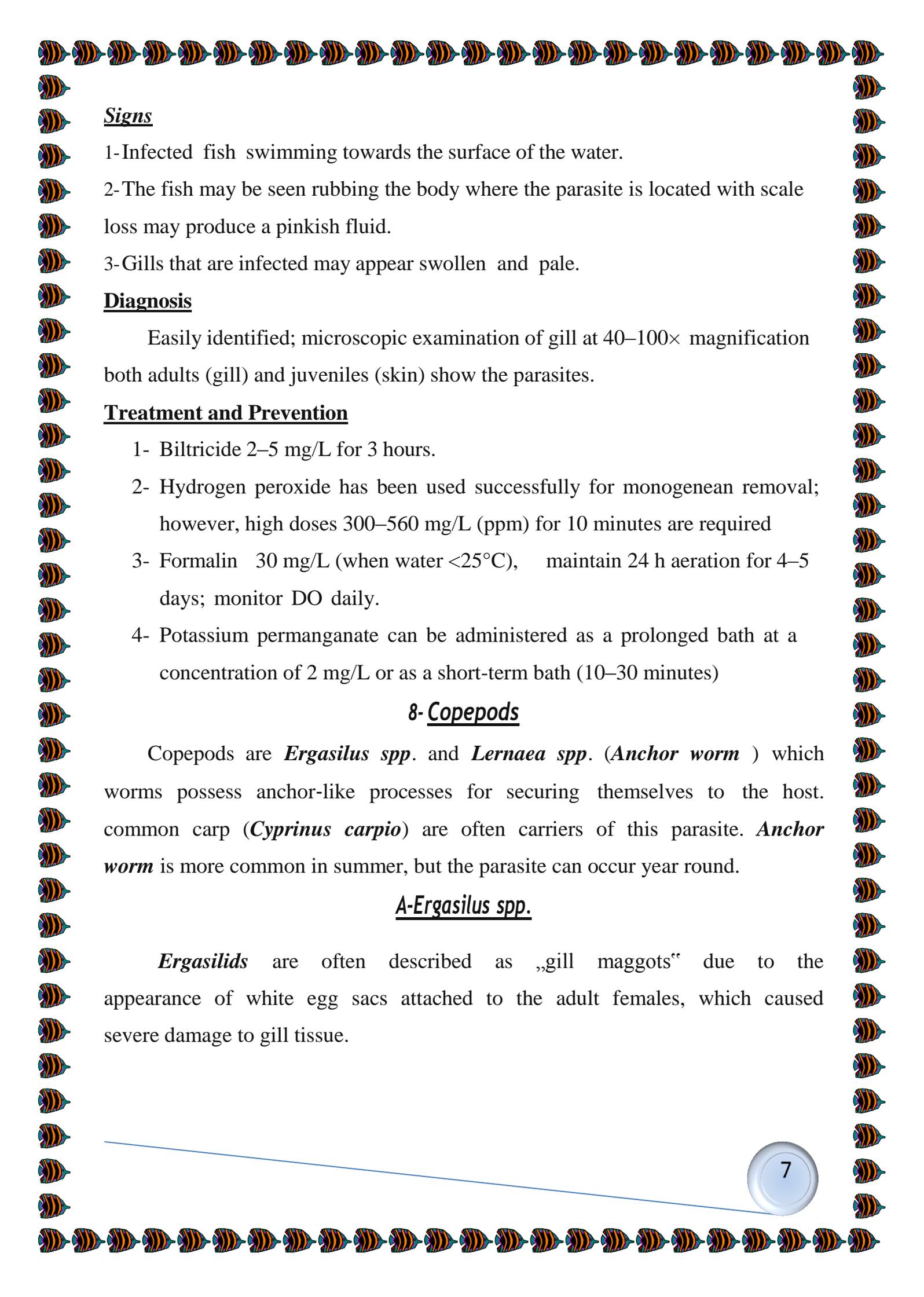
**Niclosamide.** This drug is prescribed specifically for tapeworm infections and kills the worm on contact. The dead worm is later passed through the stool. at 2–10 mg/L for 1 to 3 hours in a bath .

## 7- Monogeneans

Monogeneans (skin and gill flukes), occur on most farms. This parasite may cause stress, poor feeding response and growth, tissue damage and interference with gill function, predisposing the fish to fungal and bacterial diseases.

### Pathogen

*Gyrodactylus salaris* attached to fish characterized by eye spots and head .



## Signs

- 1- Infected fish swimming towards the surface of the water.
- 2- The fish may be seen rubbing the body where the parasite is located with scale loss may produce a pinkish fluid.
- 3- Gills that are infected may appear swollen and pale.

## Diagnosis

Easily identified; microscopic examination of gill at 40–100× magnification both adults (gill) and juveniles (skin) show the parasites.

## Treatment and Prevention

- 1- Biltricide 2–5 mg/L for 3 hours.
- 2- Hydrogen peroxide has been used successfully for monogenean removal; however, high doses 300–560 mg/L (ppm) for 10 minutes are required
- 3- Formalin 30 mg/L (when water <25°C), maintain 24 h aeration for 4–5 days; monitor DO daily.
- 4- Potassium permanganate can be administered as a prolonged bath at a concentration of 2 mg/L or as a short-term bath (10–30 minutes)

## 8- Copepods

Copepods are *Ergasilus spp.* and *Lernaea spp.* (*Anchor worm*) which worms possess anchor-like processes for securing themselves to the host. common carp (*Cyprinus carpio*) are often carriers of this parasite. *Anchor worm* is more common in summer, but the parasite can occur year round.

### A-Ergasilus spp.

*Ergasilids* are often described as „gill maggots“ due to the appearance of white egg sacs attached to the adult females, which caused severe damage to gill tissue.

### Pathogen

*Ergasilus sieboldi* is commonly known as the „gill maggot“ due to the presence of long white egg sacs that trail behind the body. Each parasite measures over 1mm in length and can be seen with the naked eye. *E. sieboldi* infects the gill filaments of a wide range of freshwater fish species using two, large pointed antennae.

### Signs

- 1- Loss of appetite with Poor growth
- 2- Present the hemorrhage on the fins with gill hyperplasia
- 3- Blotchy with dark skin

### Diagnosis

Macroscopic examination of gills, „gill maggots“; easily recognisable on gill tissue at 40× magnification.

### Treatment

- Trichlorfon 0.5 mg/L active ingredient.
- Salt (NaCl), 10 g/L continuous for 3 days.

### Prevention

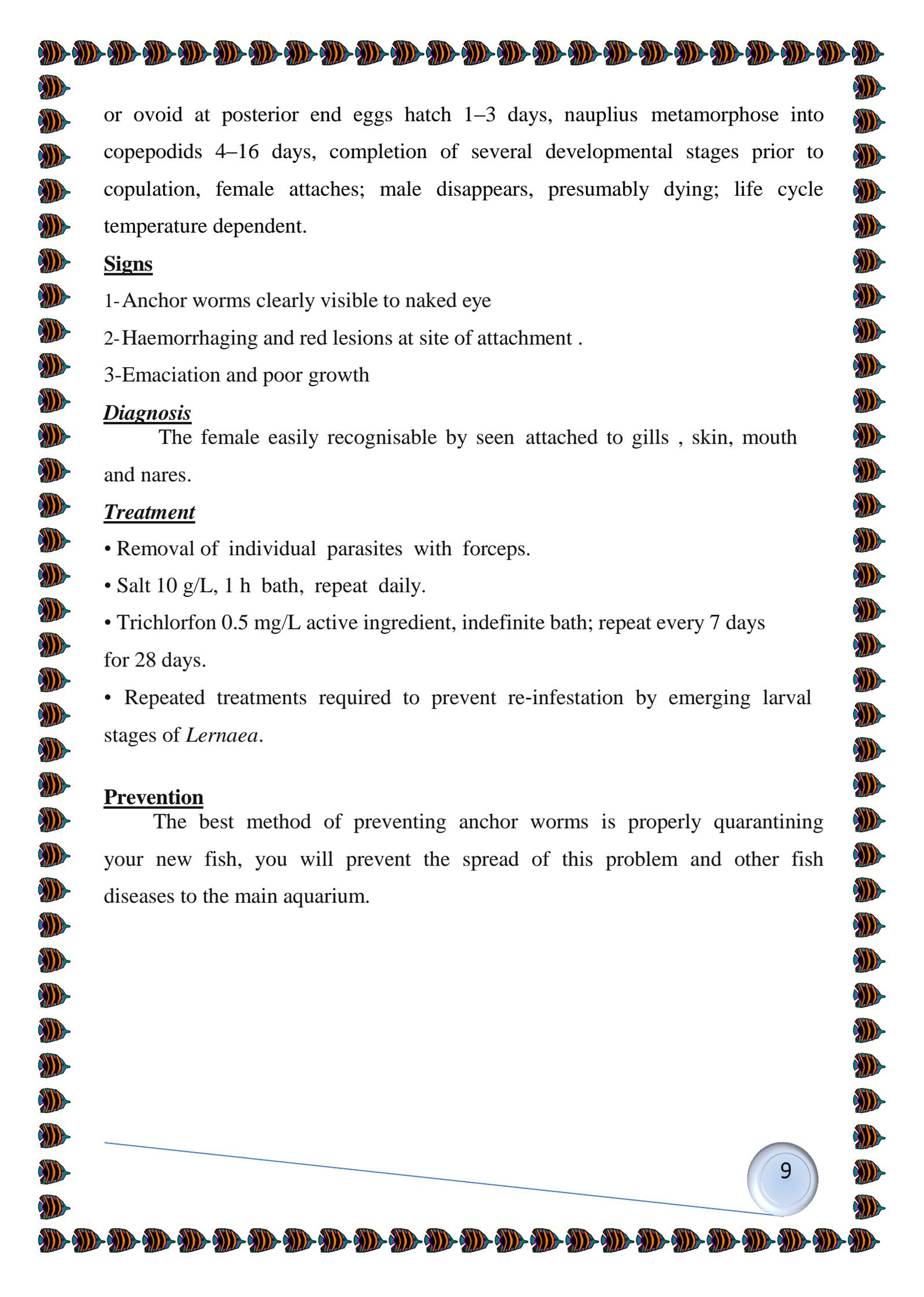
Lowering of fish density in the ponds ; improvement in water quality; use of high quality feeds.

### *B-Lernaea spp. (Anchor worm)*

*Anchor worms* possess anchor-like processes for securing themselves to the host Common Carp (*Cyprinus carpio*) are often carriers of the parasite can infest all ages .The infection more common in summer, but the parasite can occur year round.

### Pathogen

*Lernaea cyprinacea* is external parasites the anterior end of adult female buried in flesh of fish; body cylindrical; cephalic segment with two to four soft horns; adult female up to 20 mm in length; paired egg sacs greenish, conical



or ovoid at posterior end eggs hatch 1–3 days, nauplius metamorphose into copepodids 4–16 days, completion of several developmental stages prior to copulation, female attaches; male disappears, presumably dying; life cycle temperature dependent.

### **Signs**

- 1-Anchor worms clearly visible to naked eye
- 2-Haemorrhaging and red lesions at site of attachment .
- 3-Emaciation and poor growth

### **Diagnosis**

The female easily recognisable by seen attached to gills , skin, mouth and nares.

### **Treatment**

- Removal of individual parasites with forceps.
- Salt 10 g/L, 1 h bath, repeat daily.
- Trichlorfon 0.5 mg/L active ingredient, indefinite bath; repeat every 7 days for 28 days.
- Repeated treatments required to prevent re-infestation by emerging larval stages of *Lernaea*.

### **Prevention**

The best method of preventing anchor worms is properly quarantining your new fish, you will prevent the spread of this problem and other fish diseases to the main aquarium.