

FISH HEALTH AND DISEASES MANAGEMENT



Fish Health Management



- Fish health management is a term used in aquaculture to describe management practices which are designed to prevent fish disease. Once fish get sick it can be difficult to salvage them.
- Successful fish health management begins with prevention of disease rather than treatment. Prevention of fish disease is accomplished through good water quality management, nutrition, and sanitation. Without this foundation it is impossible to prevent outbreaks of opportunistic diseases. The fish is constantly bathed in potential pathogens, including bacteria, fungi, and parasites.

Fish Diseases

How do you recognise that a fish might be ill?



- Colour may fade out / change
- Body shape, condition and / or behaviour will be abnormal
- The fish may refuse to feed or overfeed and trailing faeces appear at vent.
- Condition of the fins and gills will deteriorate. Fins may be clamped close to body.
- The fish may not keep its swimming position.
- There may be signs of injuries, growths or abnormalities.

Fish Diseases

What are the causes of fish disease?



- Bad water quality
- Inappropriate diet
- Temperature (too high or too low)
- Stress
- Bullying
- Viral diseases
- Fungal infections
- Bacterial infections
- Parasites

What are signs of diseases in fish?



- Diseases may cause fish to:
 - Stop growing
 - Grow slower
 - Even die
- Identifying signs of disease early allows for treatment of disease in time to reduce the losses.
- Healthy fish are alert and active.
- Unhealthy fish display ***symptoms*** of disease.
 - A sign that a disease may exist

Common symptoms of disease

- Skin abnormalities

- ***Ulcers***

- ✦ Open sores on skin containing pus.

- ***Lesions***

- ✦ Result of an injury.

- ***Abscess***

- ✦ Area of the skin that is swollen and usually contain pus.

- ***Cyst***

- ✦ Pocket in the skin that contains fluid or dead skin.

What are the types of fish diseases?

- ***Infectious disease***

- Can be passed from one fish to another.
- Caused by germs or pathogens.

- ***Non-infectious diseases***

- Can't be spread from one fish another.
- Not caused by germs or pathogens.

FISH DISEASES

Infectious Diseases	Non-Infectious Diseases
Bacterial Disease	Nutritional Disease
Fungal Disease	Environmental Disease
Viral Disease	Chemical Disease
Parasitic Disease	Physiological Disease

How can fish diseases be prevented and treated?



- Diseases among fish can be controlled in two different ways.
 1. ***Prevention***
 - Keeping fish healthy and free of disease.
 2. ***Treatment***
 - Using medication or other practices to help fish overcome diseases.

How can fish diseases be prevented?

- ***Sanitation***

- Keeping the water and facilities clean.
- Washing tanks.
- Ensuring people don't introduce a disease.

- ***Quarantine***

- Separating some fish from the others to prevent diseases.
- New fish are brought in to a facility it is common to quarantine them for a few weeks.



Parasitic Diseases

Itch or White Spot Disease (*Ichthyophthirius*)

Cause

- Protozoan parasite either free swimming in the water or carried in with new fish or plants.
- Fish under stress from bad water conditions are more susceptible.

Symptoms

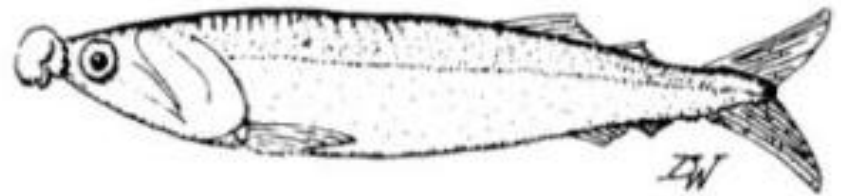
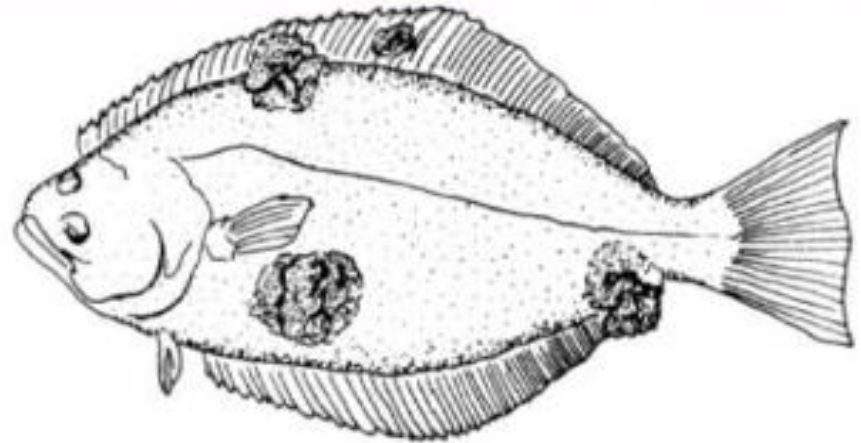
- The fish's skin and fins are covered in tiny white spots
- A badly affected fish may make rapid gill movements

Treatment

- Remove plants and the activated carbon from filters as they can affect / be affected by the medicine.
- Treat with a methylene blue based medicine which kills the free swimming larval stage (theronts)



Ichthyophthirius multifiliis (ICH)



Fish Diseases

Anchor Worm (*Lernaea*)

Cause

- The crustacean parasite *Lernaea* it can grow up to 12mm. Usually brought in by non quarantined fish.

Symptoms

- Whitish-green threads hang out of the fish's skin, with an inflamed area or ulcer at the point of their attachment.

Treatment

- The water can be treated with insecticide. The adult parasite can be removed manually and the wound treated with antiseptic to prevent bacterial infection.



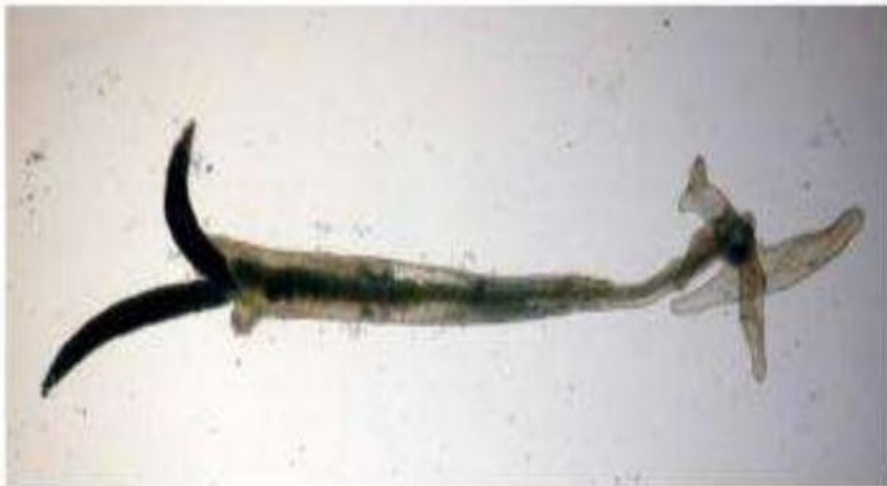
Disease in Fish Caused by Lernaea



Diagnosis



Diagnosis



Fish Diseases

Fungal infections: Fish fungus



Cause

- Aquatic fungi e.g. *Saprolegnia*. Fish that are in poor health and have damaged mucus membranes through bad water quality, rough handling, fighting or physical injury are more prone to infection. Fungus can be a secondary infection to other conditions.

Symptoms

- Grey white or brown cotton wool like growths on the skin or fins.

Treatment

- Medicines containing malachite green can be used and salt baths help recovery.



Bacterial diseases in fish

- 1) Furunculosis
- 2) Columnaris
- 3) Dropsy
- 4) Vibriosis
- 5) Tuberculosis
- 6) Bacterial gill disease
- 7) Fin rot/tail rot



Furunculosis

Cause

- *Aeromonas salmonicida*
- Furunculosis is a highly contagious disease that affects fish of all ages.
- The infection causes high mortality in salmonicids though some other fish species are also affected.
- Horizontal transmission occur via the water column but also through direct fish-to-fish contact and animal vectors.

Pathological sign

- 1) Furuncles (or boils) involving skin and/or muscle progressing to lesions.
- 2) **Haemorrhages on the skin, mouth and fin bases.**
- 3) Darkening of body colour and pale gills.
- 4) **Bloody discharge from nares and/or vent.**
- 5) Stomach filled with mucus, blood.



FURUNCULOSIS



columnaris
(cotton mouth)



- **Causative Organism:** *Flexibacter columnaris/Chondrococcus columnaris*
- Often mistaken for a fungal infection because of its mold-like lesions.
- Columnaris is a common bacterial infection in aquarium fish, particularly livebearing fish and catfish.

Columnaris lesions



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Infectious Dropsy



- **Causative agent-**

Pseudomonas punctata

- Dropsy is an old medical term that was once used to describe swelling due to accumulation of fluids in the tissues or body cavities, such as the abdomen. **Fish suffering from Dropsy often have a hugely swollen belly.**
- It was the **most feared disease** in carp culture



Vibriosis

Cause

- *Vibrio anguillarum*
- This is comma shaped bacterium.

symptoms

- ❖ Large bright colour body lesions in the skin and muscles.
- Gills may bleed with slightly pressure.
- ✓ Inflammation of intestinal tract.
- ☐ Eye problems with cloudy eye, leading to pop-eye and finally eye loss.



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Fin rot / Tail rot

Cause

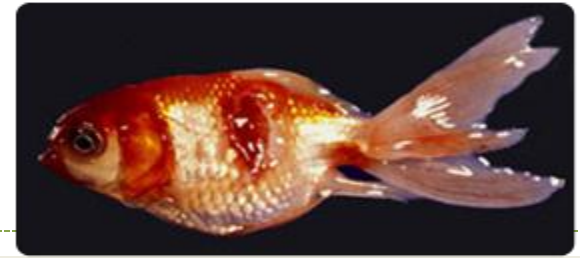
- Myxobacterium
- Fin rot is one of the most common. Terramycin is administered to treat infection.

SYMPTOMS

- **Fin edges turn white**
- **Fins fray**
- **Bases of fins inflamed**
- **Entire fin may rot away**



Fish Diseases



Ulcer Disease & Haemorrhagic Septicaemia

ULCER DISEASE

Causative agent:

Species of *Aeromonas* and *Pseudomonas*.

Species affected:

IMC, Exotic carp and cat fishes

Gross signs:

- ✓ Initially small pimple like reddish areas appear on the body.



Effect on host:

- ✓ The epidermal cells as well as the scales are lost and lesions become prominent.
- ✓ In advanced cases large scale cutaneous haemorrhages occur.

Treatment:

- ✓ Pond treatment with Potassium permanganate @ 5mg/L.
- ✓ Sulphadiazine application in feed @ 100mg/kg of feed.
- ✓ Terramycin treatment @ 70-80mg/kg body weight with feed for 10-12 days.

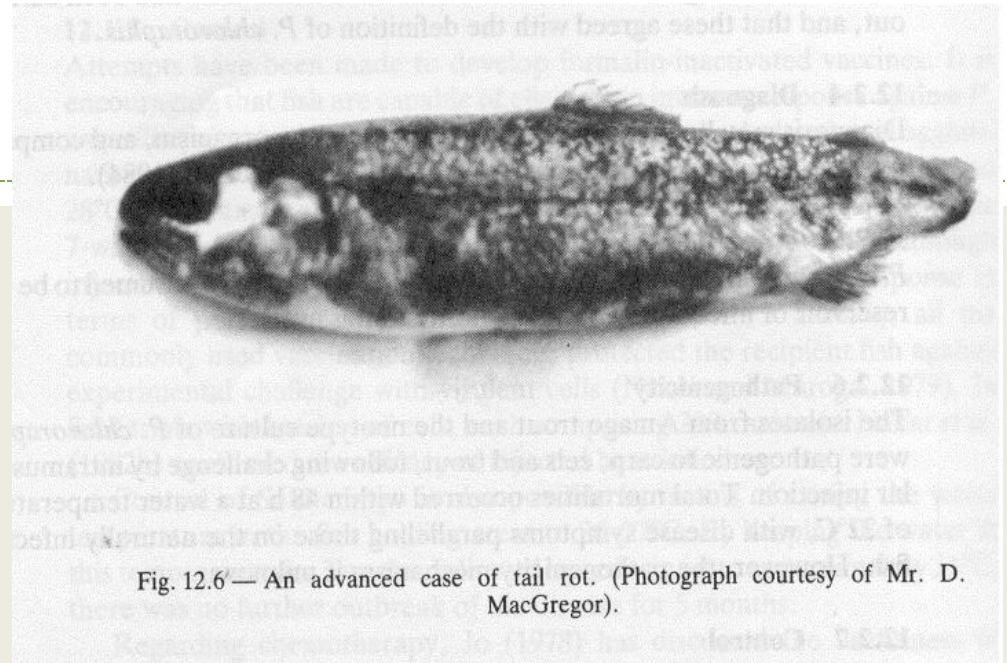


Fig. 12.6— An advanced case of tail rot. (Photograph courtesy of Mr. D. MacGregor).

Viral infections

Cyprinid Herpes Virus



Causes

- A herpes virus

Symptoms

- Causes growths that are white or grey in colour and look like melted candle wax.

Fish Diseases

Spring Viremia of Carp: this is a notifiable disease



Cause

- A viral infection caused by *Rhabdovirus carpio*.

Symptoms

- Darkening of skin, pale gills, pop eye, protruding vent, bleeding in gills skin and eyes. Lethargy, abnormal swimming positions, sitting on bottom of the tank.

Treatment

- No known treatment .

Introduction:

This viral disease is caused by *Rhabdovirus carpio*, a **bullet-shaped** RNA virus (Sano, *et al.*, 2011). Spring viremia of carp is systemic and acute and highly contagious viral disease of carp (*Cyprinus carpio*) and perhaps other cyprinids (Basic, *et al.*, 2009). It usually occurs and causes high mortality at temperatures of **(11-13C)**-(Emmenegger & Kurath, 2008), typically as temperatures rise in spring (Carstens,2010). SVC is also called (Infectious Dropsy of Carp, Infectious Ascites, Hydrops, Red Contagious Disease, Rubella, Hemorrhagic Septicemia) (Sano, *et al.*, 2011). The disease can cause up to **100%** mortality and affects all ages of fish. It has resulted in significant economic losses to fisheries in all the World. (Haghghi, *et al.*, 2008).

3. EXOPHTHALMIA (BULGING EYES)



Source: (Basic, et al., 2009).

Figure (6)

4. DISTENDED ABDOMEN (BLOATED APPEARANCE)



Source: (Zhang, et al., 2009).

Figure (7)

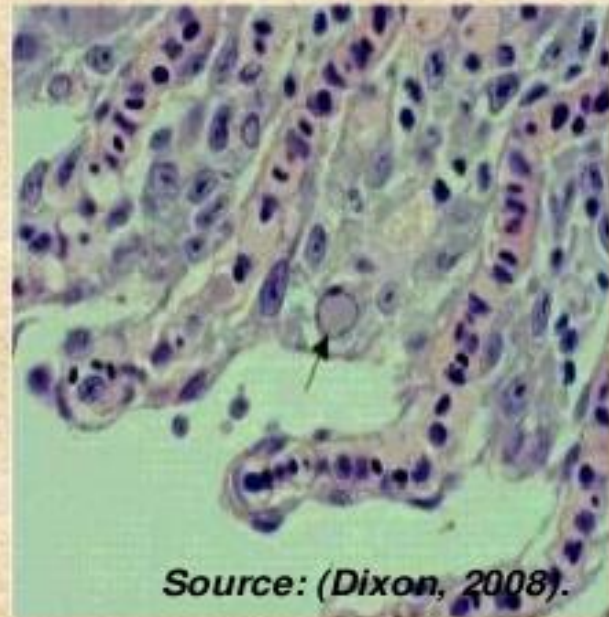
9. SWOLLEN STOMACH



Source: (Basic, et al., 2009).

Figure (12)

10. HISTOPATHOLOGICAL SECTION OF GILL IN CARP INFECTED WITH SVC



Source: (Dixon, 2008).

Figure (13)



3. EXOPHTHALMIA (BULGING EYES)



Figure (6)

4. DISTENDED ABDOMEN (BLOATED APPEARANCE)



Figure (7)